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U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

WATER SUPPLY OUTLOOK FOR MONTANA

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
Collaborating with
MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF
MAY 1, 1978



Issued by
R.M. DAVIS
ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

Released by
VAN K. HADERLIE
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
Bozeman, Montana

In Cooperation with
J. A. ASLESON
DIRECTOR
Montana Agricultural Experiment Station

Report prepared by

PHILLIP E. FARNES, Snow Survey Supervisor
DONALD J. HUFFMAN, Hydrologist
CINDY L. ONDRAK, Statistical Clerk

SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P.O. Box 98
BOZEMAN, MONTANA 59715
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Montana Water Supply Outlook

MOUNTAIN SNOWPACK

THE HIGH ELEVATION SNOWPACK IS NEAR AVERAGE IN MOST AREAS. LOWER ELEVATIONS HAVE BELOW AVERAGE WATER CONTENT. THE LACK OF LOW ELEVATION SNOW WILL NOT ADVERSELY AFFECT THE WATER SUPPLY. EARLY SEASON RUNOFF WILL BE A LITTLE LESS THAN NORMAL, BUT THE GOOD HIGH ELEVATION SNOW WILL HOLD STREAMFLOWS UP LATER IN THE SUMMER.

THE WARM TEMPERATURES THAT STARTED THE SNOW MELTING NEAR THE END OF MARCH HAVE CONTINUED. TEMPERATURES HAVE NOT BEEN ABNORMALLY WARM AND MOST OF THE MELT HAS BEEN QUITE GRADUAL AND UNIFORM THROUGHOUT THE MONTH. TEMPERATURES IN THE HIGHER ELEVATIONS HAVE REMAINED COOL. ALTERNATING PERIODS OF WARM WEATHER AND SNOWFALL HAVE ALLOWED SNOW WATER CONTENT LEVELS IN THE

HIGHER AREAS TO REMAIN ABOUT THE SAME AS THEY WERE AT THE BEGINNING OF APRIL.

WEST OF THE DIVIDE, THE FLATHEAD AND BITTERROOT RIVERS HAVE NEAR AVERAGE SNOWPACK WHILE THE REMAINDER OF THE DRAINAGES HAVE BELOW AVERAGE SNOW.

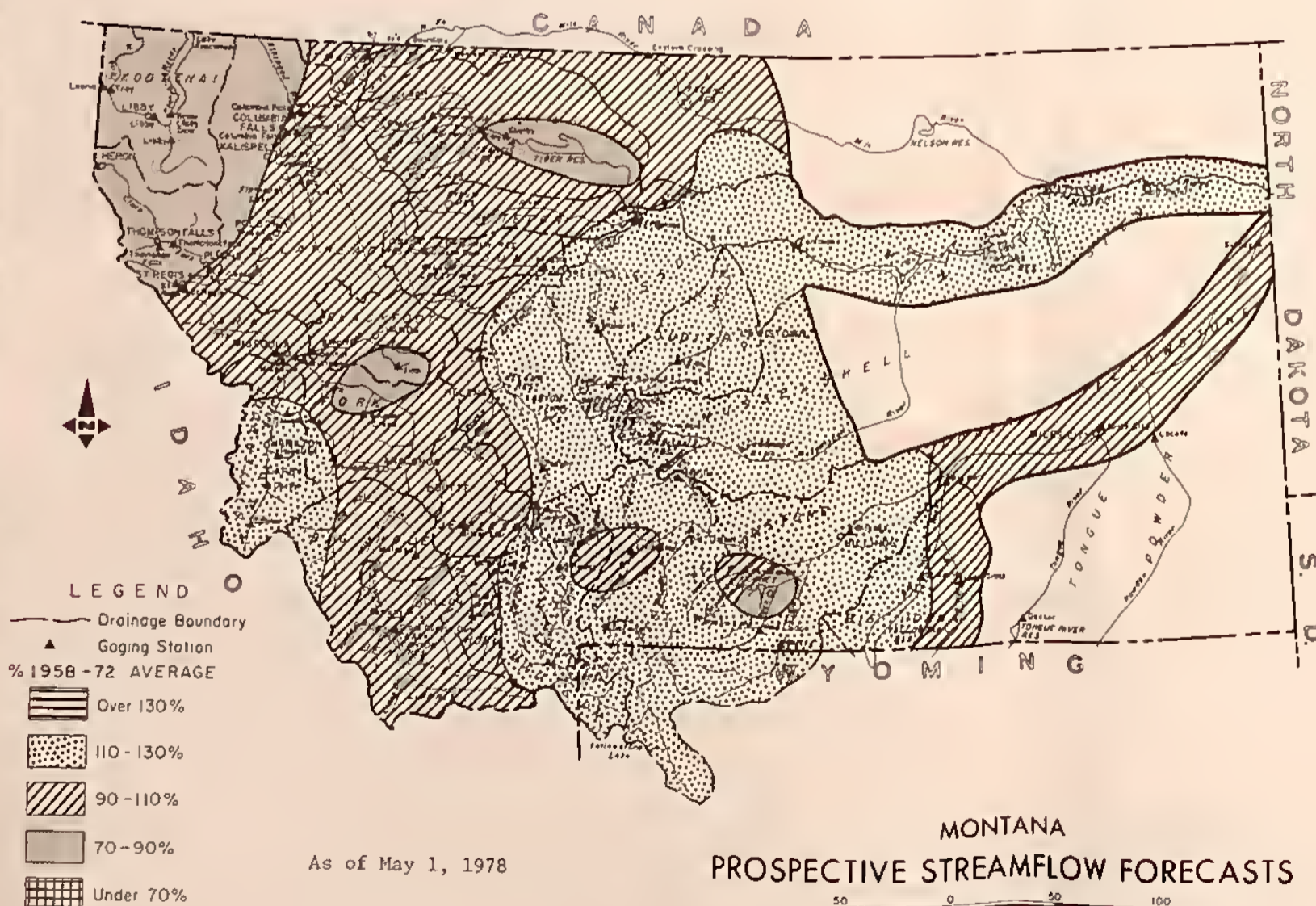
EAST OF THE DIVIDE, ABOVE AVERAGE SNOW WATER CONTENT WAS MEASURED IN PARTS OF THE RED LODGE, BIG HOLE, MADISON, GALLATIN AND YELLOWSTONE RIVER HEADWATERS AND IN THE BEAR PAW, BIG BELT, LITTLE BELT AND CASTLE MOUNTAINS.

THE SMALL AREA ON THE FRONT FACE OF THE BEARTOOTH MOUNTAINS NEAR RED LODGE CONTINUES TO SHOW WELL BELOW AVERAGE SNOW.

OTHER AREAS IN THE YELLOWSTONE AND MISSOURI RIVER DRAINAGES HAVE NEAR AVERAGE SNOWPACK IN THE MAIN WATER PRODUCING ZONES.



STREAMFLOW FORECASTS



As of May 1, 1978

**MONTANA
PROSPECTIVE STREAMFLOW FORECASTS**

SCALE IN MILES
0 50 100
Soil Conservation Service
Bozeman, Montana

MAY THROUGH SEPTEMBER RUNOFF IS FORECAST TO BE BELOW AVERAGE IN EXTREME NORTHWESTERN MONTANA AND IN SMALLER AREAS NEAR DRUMMOND, SHELBY AND RED LODGE.

ABOVE AVERAGE RUNOFF IS EXPECTED IN THE BITTERROOT RIVER DRAINAGE, AND MOST STREAMS AND RIVERS SOUTH AND WEST OF THE MISSOURI RIVER AND THE MADISON AND GALLATIN RIVER DRAINAGES IN THE MISSOURI RIVER HEADWATERS.

RUNOFF IN APRIL WAS GENERALLY A LITTLE ABOVE AVERAGE IN MOST DRAINAGES. THE GRADUAL MELTING OF LOW ELEVATION SNOW HAS HELPED REDUCE THE POTENTIAL FOR EXTREMELY HIGH WATER RESULTING FROM RAPID SNOW MELT.

MOST STREAMS ARE EXPECTED TO HAVE ABOUT AVERAGE STREAM LEVELS DURING THE MAIN SNOW MELT PERIOD UNLESS HEAVY RAINS COINCIDE WITH THE MAIN MELT PERIOD. IT APPEARS THAT THE MAIN SNOW MELT RUNOFF WILL OCCUR ON MOST MAJOR RIVERS AFTER MID-MAY.

WITH THE NEAR OR ABOVE AVERAGE, HIGH ELEVATION SNOW AND GOOD SOIL MOISTURE IN MOST AREAS, THE IRRIGATION WATER SUPPLIES ARE EXPECTED TO BE AVERAGE OR ABOVE IN MOST AREAS.

Columbia River Drainage

MOUNTAIN SNOWPACK

CANADA



SUMMARY of SNOW MEASUREMENTS

RIVER BASIN AND SUB-DRAINAGE	Number of Gaging Stations	THIS YEAR'S SNOW WATER AS PERCENT OF LAST YEAR	Average
Kootenai/BC	24	200	82
Kootenai/Montana	20	256	82
Kootenai	44	231	82
Little Bitterroot	4	50	52
Flathead	30	239	91
Clark Fork above Blackfoot	20	343	79
Blackfoot	12	369	88
Clark Fork above Missoula	32	354	83
Bitterroot	12	312	98
Lower Clark Fork below Missoula	14	273	82
Clark Fork (total w/o Flathead)	58	311	86
Pend O'Reille (Clark Fork and Flathead)	88	279	88
COLUMBIA (Pend O'Reille and Kootenai)	120	257	85

COLUMBIA RIVER DRAINAGE MONTANA

MOUNTAIN SNOW WATER EQUIVALENT

KOOTENAI - CONSIDERABLE MELT IN LOWER ELEVATIONS DURING APRIL. HIGH ELEVATIONS ARE ABOUT THE SAME AS A MONTH AGO. ALL AREAS ARE GENERALLY BELOW AVERAGE IN SNOWPACK.

FLATHEAD - HIGH ELEVATIONS ARE NEAR OR ABOVE AVERAGE WITH SOME INCREASES IN WATER CONTENT DURING THE MONTH. DRAINAGES WEST OF KALISPELL AND GLACIER NATIONAL PARK AND LOWER ELEVATIONS GENERALLY HAVE BELOW AVERAGE SNOWPACK.

BLACKFOOT - MOST DRAINAGES HAVE AVERAGE OR ABOVE SNOWPACK FOR THIS TIME OF YEAR. LOWER ELEVATIONS GENERALLY HAVE BELOW AVERAGE SNOW AS A RESULT OF MELT DURING APRIL.

LOWER CLARK FORK - GENERALLY BELOW AVERAGE IN ALL AREAS. THE SNOWPACK IS NEAR TO AVERAGE IN HIGHER ELEVATIONS. LOWER ELEVATIONS SHOW CONSIDERABLE MELT DURING APRIL.

MOUNTAIN SOIL MOISTURE

MANY LOWER ELEVATION SOILS ARE DRYING SOMEWHAT ON THE SURFACE BETWEEN SHOWERS. IN GENERAL SOIL MOISTURE IS GOOD.

VALLEY PRECIPITATION

REPORTS FROM THE NATIONAL WEATHER SERVICE INDICATE THAT VALLEY PRECIPITATION WAS GENERALLY ABOVE NORMAL FOR APRIL.

IRRIGATION WATER SUPPLIES

MOST STREAMS PROVIDING IRRIGATION WATER ARE EXPECTED TO HAVE ABOUT AVERAGE LATE SEASON FLOWS. SOME STREAMS WITH HIGH ELEVATION HEADWATERS WILL HAVE ABOVE AVERAGE FLOWS.

STREAMFLOW FORECASTS

SPRING RUNOFF

STREAMFLOWS DURING THE MAIN SNOWMELT PERIOD ARE EXPECTED TO BE AROUND NORMAL LEVELS. THE MELTING OF LOWER ELEVATION SNOW HAS REDUCED THE POTENTIAL FOR HIGH FLOWS FROM SNOWMELT ALONE. ALL STREAMS SHOULD BE ABLE TO CARRY THE SNOWMELT RUNOFF WITHIN THEIR CHANNELS.

WATER SUPPLY OUTLOOK

STREAM or AREA	Spring Season	Late Season
Tobacco	avg	fair
Little Bitterroot	avg	fair
Missoula Valley	avg	avg
Flint Creek	avg	avg
Upper Clark Fork	avg	avg
Nevada Creek	avg	avg
Blackfoot	avg	avg
West-side Bitterroot	ex	avg
East-side Bitterroot	ex	avg
Bitterroot River	ex	avg
Lower Clark Fork	avg	avg

BITTERROOT - APRIL STREAMFLOW WAS ABOVE AVERAGE. MAY THROUGH SEPTEMBER FLOWS SHOULD BE ABOVE AVERAGE. AVERAGE OR ABOVE LATE SEASON FLOWS CAN BE ANTICIPATED.

LOWER CLARK FORK - SMALLER STREAMS FLOWING INTO THE CLARK FORK WILL HAVE BELOW AVERAGE RUNOFF. THE FLOW IN THE CLARK FORK WILL BE A LITTLE BELOW AVERAGE FOR THE SEASON. STREAMFLOW IN APRIL WAS A LITTLE ABOVE AVERAGE.

BLACKFOOT - SEASONAL RUNOFF IS ABOUT 10 PERCENT BELOW AVERAGE. LATE SEASON STREAMFLOW IS EXPECTED TO BE ABOUT AVERAGE. RUNOFF DURING APRIL WAS A LITTLE ABOVE AVERAGE.

UPPER CLARK FORK - AVERAGE OR A LITTLE BELOW AVERAGE RUNOFF IS FORECAST FOR MOST STREAMS. STREAMS WITH LOWER ELEVATION HEADWATERS WILL PRODUCE BELOW AVERAGE RUNOFF. RUNOFF IN APRIL WAS A LITTLE ABOVE AVERAGE.

PEAK FLOWS

FORECAST POINT	PEAK FLOW (SECOND FEET)	Average
Blackfoot River near Bonner	8,000 - 10,000	9,902
Clark Fork River above Missoula	14,000 - 18,000	16,531
Bitterroot River near Darby	7,000 - 9,000	6,650
North Fork Flathead near Columbia Falls	17,000 - 20,000	23,167
Middle Fork Flathead near West Glacier	17,000 - 22,000	25,020

KOOTENAI - MAY THROUGH SEPTEMBER RUNOFF IS FORECAST AT 10 TO 20 PERCENT BELOW AVERAGE. RUNOFF FOR APRIL WAS ABOUT AVERAGE.

FLATHEAD - FORECASTED RUNOFF IS A LITTLE BELOW AVERAGE FOR THE MAIN SNOWMELT PERIOD FOR THE SOUTH AND MIDDLE FORKS. BELOW AVERAGE RUNOFF IS EXPECTED FROM STREAMS WITH HEADWATERS IN THE SALISH MOUNTAINS AND NORTH FORK. APRIL RUNOFF WAS ABOVE AVERAGE.

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD				THIS YEAR				PAST RECORD				
	FORECAST		THOUSAND ACRES FEET		FORECAST		THOUSAND ACRES FEET		FORECAST		THOUSAND ACRES FEET		FORECAST		THOUSAND ACRES FEET		
	Thousand Acres Feet	Percent of Average	Last Year	Average	Thousand Acres Feet	Percent of Average	Last Year	Average	Thousand Acres Feet	Percent of Average	Last Year	Average	Thousand Acres Feet	Percent of Average	Last Year	Average	
		PERIOD	May - September				May - July				May - June						
KOOTENAI RIVER below Libby Dam (1)	5,600	80	3,662	6,981	4,750	80	2,728	5,941	3,630	80	2,154	4,534					
FISHER RIVER near Libby	180	88	205	165	88	188											
YAKA RIVER near Troy	370	82	451	350	82	428											
KOOTENAI RIVER at Leonia (1)	6,700	81	4,410	8,262	5,770	81	3,345	7,146	4,500	80	2,550	5,620					
INFLOW MOULTON RESERVOIR near Butte (million gallons)	-	-	-	188	90	68.3	208		167	90	62.4	186					
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)	44.6	91	13.4	48.9	35.5	90	11.3	39.5									
FLINT CREEK near Southern Cross (3)	13.8	93	7.6	14.9	11.7	92	5.6	12.7									
FLINT CREEK below Boulder Creek (4)	61.0	95		64.0	46.0	95		48.5									
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	11.5	85	2.4	13.5	10.2	80	1.9	12.8									
MIDDLE FORK ROCK CREEK near Philipsburg	79.0	110		72.0	70.5	109		64.6									
NEVADA CREEK near Finn	14.5	83		17.4	13.2	84		15.8									
BLACKFOOT RIVER near Bonner	830	92		905	740	91		809	640	93		688					
CLARK FORK RIVER above Hilltown (7)	690	101		681	590	102		578	490	102		479					
CLARK FORK RIVER above Missoula	1,520	96	456	1,586	1,330	96	357	1,387	1,130	97	292	1,167					
WEST FORK BITTERROOT RIVER near Conner (7)	190	119		159	175	123		142									
BITTERROOT RIVER near Darby	590	112	213	529	545	112	174	486	470	111	146	424					
SKALAKO CREEK near Hamilton	58.1	110		53.6	51.5	110		46.7									
BURNT FORK CREEK near Stevensville (8)	36.7	110	13.8	33.3	32.0	110	10.1	29.0									
BITTERROOT RIVER at Missoula (9)	1,480	108		1,375	1,365	108		1,261	1,180	109		1,084					
CLARK FORK RIVER below Missoula	3,000	101		2,961	2,695	102		2,648	2,310	103		2,251					
CLARK FORK RIVER at St. Regis (NWS)	3,720	94	1,249	3,941	3,310	94	1,028	3,521	2,620	94	874	2,996					
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,530	85		1,809	1,380	85		1,631	1,150	84		1,369					
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,630	94	860	1,740	1,500	94	723	1,591	1,250	93	628	1,337					
SOUTH FORK FLATHEAD RIVER near Columbia Falls	2,060	97	1,016	2,120	1,930	97	904	1,982	1,670	97	820	1,726					
FLATHEAD RIVER at Columbia Falls (10)	5,400	93	2,653	5,785	4,550	93	2,282	5,305	4,150	92	2,020	4,514					
SWAN RIVER near Big Fork	635	102		622	550	103		535									
FLATHEAD RIVER near Polson (11)	6,400	94	2,968	6,838	5,900	94	2,535	6,271	4,950	93	2,242	5,303					
CLARK FORK RIVER near Plains (11) (NWS)	10,100	90	4,351	11,182	9,090	90	3,654	10,103	7,660	90	3,186	8,515					
THOMPSON RIVER near Thompson Falls	197	86		229	170	85		200									
PROSPECT CREEK at Thompson Falls	100	86		116	90	84		107									
CLARK FORK RIVER at Whitehorse Rapids (12) (NWS)	10,900	88		12,349	9,780	88		11,118	8,240	88		9,358					

- Adjusted for storage in Lake Kootenai.
- Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
- Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
- Sum of Flint Creek at Maxville and Boulder Creek at Maxville.
- Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.
- Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.
- Adjusted for storage in Painted Rocks Reservoir.
- Adjusted for diversion into Sunset Highline Canal.
- Difference in observed flow Clark Fork above and below Missoula.
- Adjusted for storage in Hungry Horse Reservoir.
- Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
- Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.

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- Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
- Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.

(NWS) National Weather Service.

Average based on 1958-72 period.

SNOW SURVEYS



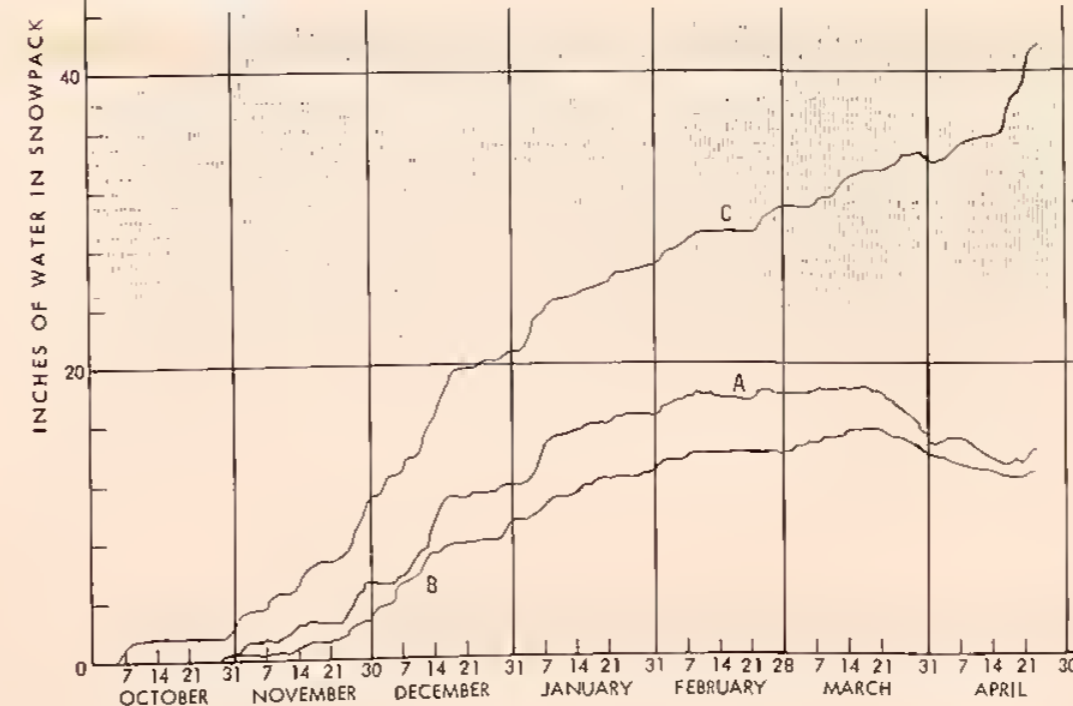
SNOW SURVEYORS AT WORK

SNOW

DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	THIS YEAR		PAST RECORD	
			Snow Depth (Inches)	Water Content (Inches)	Snow Depth (Inches)	Water Content (Inches)
ABUNDANCE LAKE	8800	4/29	60	25.4	11.8	23.0
AMHOSL	6480	4/27	20	9.5	1.6	13.9
ARCH FALLS	7350	4/27	30	12.2	6.1	16.2
BAUGER PASS	6900	5/03	74	39.1	20.2	46.2
BALO EAGLE PEAK	5700	4/27	117	54.1	28.8	69.3
BALO MOUNTAIN (WY)	9600	5/02	87	34.3	35.0	28.0
BALO RIDGE	7500	4/28	28	12.8	7.8	14.6
BANFIELD MOUNTAIN	5600	4/27	34	18.6	5.6	23.7
BANFIELD MOUNTAIN PILLOW	5600	5/01	SP	13.5	1.3	20.9
BAKEE CREEK	5500	5/01	71	37.8	18.7	49.6
BAKEE MIDWAY	4600	5/01	43	20.8	12.2	35.1
BAKEE TRAIL	3800	5/01	0	0.0	0.0	1.2
BASIN CREEK	7160	4/27	20	5.9	5.3	-
BASSO PEAK	5150	4/26	7	2.9	0.0	8.5
BAITLE RIDGE	6020	4/26	0	0.0	0.0	5.4
BEAGLE SPRINGS	8850	4/28	29	10.2	0.0	-
BEAR BASIN	8150	4/25	63	28.9	13.2	24.9
BEAR MOUNTAIN (10)	5400	4/26	106	49.3	23.0	68.8
BEAR PAW SKI AREA	5200	4/28	22	8.8	0.0	7.2
BEAVER LAKE	5100	4/28	40	19.3	5.8	23.7
BIG COULEE	6750	4/26	118	57.7	32.1	54.5
BIG CREEK	7700	4/25	43	19.5	9.1	20.4
BIG SKY	6350	4/25	4	1.6	0.0	3.8
BIG SKY MEADOW	7150	5/02	66	30.0	25.0	24.9
BIG SPRINGS (10)	6500	4/28	38	20.6	0.0	-
BLACK BEAR	7950	4/25	101	49.6	7.7	-
BLACK BEAR PILLOW	7590	4/25	SP	47.6	7.0	-
BLACK MOUNTAIN	7750	4/26	42	17.4	5.0	-
BLACK PINE	7100	4/28	30	12.5	5.0	14.3
BLACK PINE PILLOW	7100	4/26	SP	16.4	2.7	15.2
BLOODY DICK	7600	4/26	30	13.6	2.3	14.2
BLOODY DICK PILLOW	7600	4/26	SP	13.1	2.2	-
BLUE LAKE	5900	5/03	38	19.3	5.8	26.5
BOTS SOTS	8000	4/26	4	1.3	3.0	-
BOULDER MOUNTAIN	7950	4/26	63	27.2	11.6	22.2
BOULDER MOUNTAIN PILLOW	7950	4/26	SP	26.6	12.0	-
BOX CANYON	6670	5/01	14	6.2	0.0	-
BOXELDER CREEK	5100	4/28	0	0.0	0.0	-
BRANHAM LAKE	8850	5/01	77	35.6	14.4	36.6
BRIDGER BOWL	7250	4/26	73	36.4	18.9	35.1
BRIDGER BOWL PILLOW	7250	4/26	SP	37.0	13.2	34.0
BRISTOW CREEK	5900	4/27	0	0.0	0.0	2.3
BRUSH CREEK TIMBER	5000	4/26	10	4.1	0.0	8.2
BULL MOUNTAIN	6600	4/28	0	0.0	0.0	-
BURGESS R.S. #2 (WY)	7900	5/02	23	9.4	12.6	10.0
CABIN CREEK	5200	4/27	9	3.0	0.0	2.2
CALL ROAD	8050	4/28	39	14.4	4.4	13.9

KOOTENAI-FLATHEAD RIVER

- Grave Creek - elevation 4,300 ft., in Grave Creek drainage east of Eureka.
- Hand Creek - elevation 5,035 ft., in Logan Creek drainage near Flathead Kootenai divide northwest of Kalispell.
- Stahl Peak - elevation 6,030 ft., in Grave Creek drainage east of Eureka.



FLATHEAD RIVER

- Emery Creek - elevation 4,350 ft., in Emery Creek drainage northeast of Kalispell.
- Meadow Creek - elevation 4,000 ft., in South Fork Flathead River drainage southwest of Hungry Horse. Data from Bonville Power Admin.
- Noisy Basin - elevation 6,040 ft., in Noisy Creek drainage east of Kalispell.



SNOW

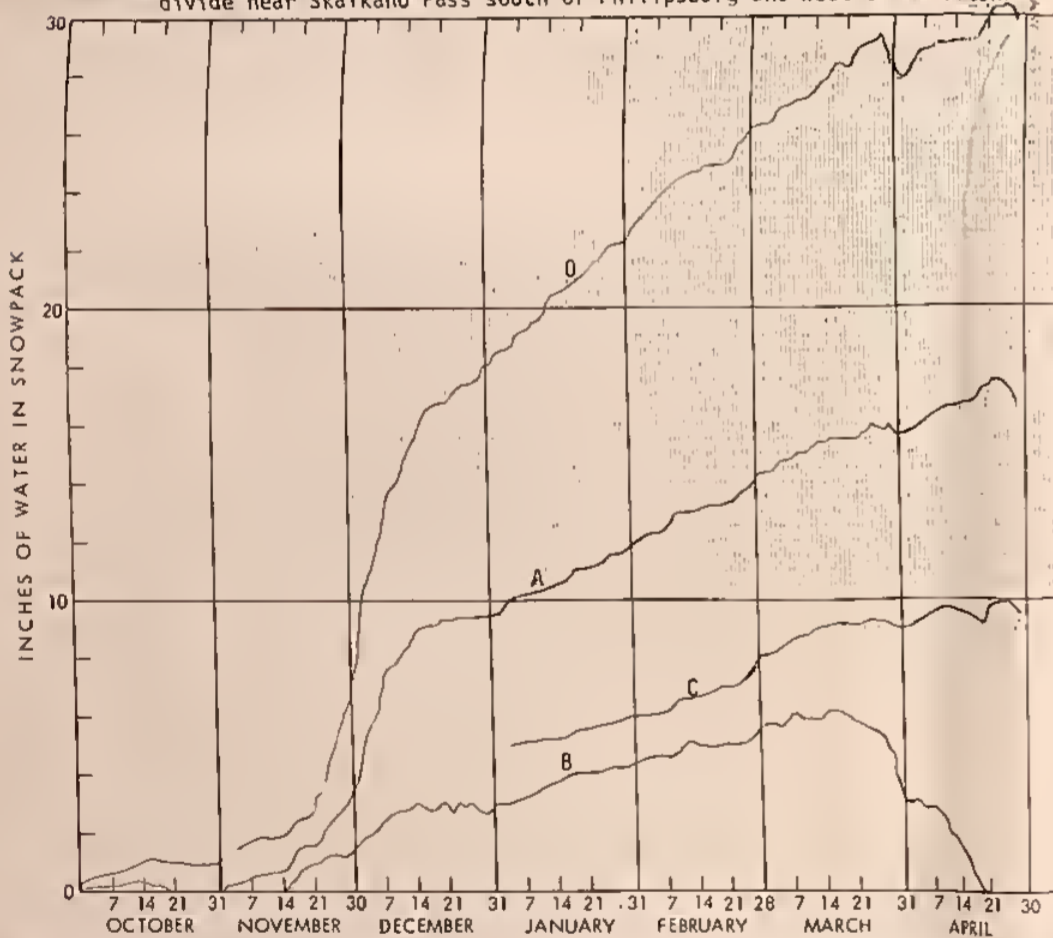
DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	THIS YEAR		PAST RECORD	
			Snow Depth (Inches)	Water Content (Inches)	Snow Depth (Inches)	Water Content (Inches)
NAME			Left	Time	Left	Time
CAVLETT CREEK	6450	4/27	23	11.5	0	4.2
CAVLETT CREEK PILLOW	6450	4/27	SP	3.7	0	-
CAMP MISERY	6400	4/28	131	56.8	41.3	52.3
CAMP SENIA	7890	4/29	17	4.9	3.0	9.0
CANYON (WY)	7750	4/30	38	17.0	0	16.0
CARROT BASIN	9000	4/27	SP	42.2	17.2	45.4
CARROT BASIN PILLOW	9000	4/27	SP	35.7	13.8	-
CEGAR GROVE	4100	4/27	10	3.4	0	6.6
CHASSMAN RESERVOIR	6200	4/27	0	0.0	0	2.5
CHICKEN CREEK	4060	4/27	5	2.6	0	-
CLOVER MEADOW	8600	4/28	51	20.6	8.0	20.0
COLE CREEK	7850	4/28	31	9.2	15.5	-
COLE CREEK PILLOW	7850	4/28	SP	11.3	11.6	-
COLLEY CREEK	6300	4/28	0	0	0	-
COMBINATION	5600	4/28	0	0	0	5.5
COMBINATION PILLOW	5600	4/28	SP	0	0	-
COKE STATION	6150	4/28	60	21.9	10.0	22.0
COPPER BOTTOM	5200	4/25	4	1.5	0	6.8
COPPER BOTTOM PILLOW	5200	4/25	SP	8.1	0	-
COPPER CAMP	6950	4/25	63	32.1	8.2	56.6
COPPER CREEK	5700	4/25	19	7.9	0	12.4
COPPER LAKE CREEK	6100	4/25	31	24.9	3.6	25.5
COPPER MOUNTAIN	7700	4/28	21	11.3	0	12.5
COTTONWOOD CREEK	6400	4/26	20	7.0	0	-
COTOTE HILL	4200	4/26	1	0.3	0.6	3.5
CRYSTAL LAKE	6100	5/02	23	11.0	12.9	16.2
DAU CREEK LAKE	8400	4/26	40	15.6	3.4	17.6
DAISY PEAK	7600	4/28	22	9.9	2.0	12.4
DALY CREEK	5780	4/25	23	10.3	4.6	-
DAMKHORSE LAKE	8600	4/29	77	32.2	13.6	29.4
DAVIS CREEK	5400	4/25	44	21.7	4.9	24.2
DEADMAN CREEK	6450	4/27	22	10.6	6.4	10.6
DEADMAN CREEK PILLOW	6450	4/27	SP	9.6	1.8	8.6
DESERT MOUNTAIN	5600	4/27	27	12.3	5.9	15.2
DEVILS SLIDE	8100	4/27	65	27.4	18.8	28.6
DISCOVERY BASIN	7050	4/26	19	7.7	2.5	-
DIVIDE	7800	4/28	33	13.1	0	11.5
DIVIDE PILLOW	7800	4/28	SP	13.4	4.4	-
DIX HILL	6400	5/01	0	0	0	-
EAST FORK K.S.	5400	4/29	0	0	0	-
ELK HORN SPRINGS	7800	4/29	26	10.8	0	9.1
ELK PEAK	8000	4/25	65	26.5	14.4	22.1
EMERY CREEK	4350	4/27	14	4.9	0	-
EMERY CREEK PILLOW	4350	4/27	SP	6.6	0	-
FAITY CREEK	5500	4/26	62	29.8	15.5	25.0
FISH CREEK	8000	4/27	28	8.2	6.0	-
FISHER CREEK	9100	4/28	105	47.9	22.8	42.4
FISHER CREEK PILLOW	9100	4/28	SP	42.8	21.7	38.5
FIVE SPRINGS FALLS (WY)	7500	4/28	22	8.9	10.8	7.8
FIVE-BULL	5700	5/03	4	1.4	0	5.1

SNOW SURVEYS

SNOW	DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
FLEECER RIDGE	7500	4/26	22	5.4	.4	-	-
FOULMEN	6280	4/29	44	19.1	7.4	19.9	-
FOUR MILE	6900	4/28	1	2.4	.3	8.8	-
FOURTH OF JULY	6450	4/27	14	5.0	.0	-	-
FRED BURK PASS	6000	4/26	69	28.6	11.8	32.6	-
FREIGHT CREEK	6000	5/03	30	13.5	.0	15.9	-
FRIDAY HILL	4620	4/27	26	13.0	.0	-	-
FROMMER MEADOWS	6480	4/24	10	3.8	.0	-	-
FROMMER MEADOWS PILLW	6480	4/24	SP	8.4	.0	-	-
GARVER CREEK	4250	4/25	14	6.4	.0	5.4	-
GARVER CREEK PILLW	4250	5/01	SP	5.4	.7	5.1	-
GIBBONS PASS	7100	4/26	47	25.4	4.5	24.2	-
GOAT MOUNTAIN	7000	4/28	29	10.9	.1	10.9	-
GOLD STONE	8100	4/27	49	20.7	6.9	19.4	-
GRASSHOPPER	7000	4/25	13	5.4	1.4	5.9	-
GRAVE CREEK	4300	4/24	SP	19.1	.0	16.3	-
GRAVE CREEK PILLW	4300	4/24	SP	19.1	.0	-	-
GRIFFIN CREEK DIVIDE	5150	4/25	17	7.6	.0	8.6	-
GRIZZLY PEAK	8400	4/28	37	12.1	16.0	21.1	-
GUNSIGHT LAKE	6500	5/03	78	45.8	21.6	45.4	-
HALVERSON CREEK (10)	4850	4/26	85	40.2	18.0	49.7	-
HAND CREEK	5040	4/26	25	10.7	.0	-	-
HAND CREEK PILLW	5040	4/26	SP	10.9	.0	-	-
HAWKINS LAKE	6450	4/25	70	30.9	13.1	35.4	-
HAWKINS LAKE PILLW	6450	5/01	SP	25.3	12.0	33.2	-
HEART LAKE (KAIL)	4800	4/22	52	15.3	5.3	19.0	-
HEBGEN DAM	6550	4/27	23	11.7	.6	6.6	-
HELL HORNING DIVID	5770	4/25	72	32.2	12.6	34.3	-
HEWLEIGH JUNCTION	4850	4/27	45	25.4	9.0	-	-
HIGHWOOD DIVIDE	5650	4/28	0	.0	.0	-	-
HIGHWOOD STATION	4600	4/28	0	.0	.0	-	-
HULBROOK	4530	4/26	3	1.1	.4	1.9	-
HOOD MEADOW	6600	4/27	18	7.8	6.4	11.6	-
HOODNOO BASIN	6000	4/27	104	52.4	20.6	55.2	-
HOODNOO BASIN PILLW	6000	4/27	SP	48.3	13.6	55.5	-
HOODNOO CREEK	5900	4/27	95	45.4	18.4	52.2	-
ICHBURG LAKE #3	5600	5/03	47	22.3	12.9	33.5	-
INDEPENDENCE	7850	5/01	36	17.2	4.0	19.8	-
INTEKGAARD	6450	4/27	0	.0	.0	9.1	-
ISLAND PARK (10)	6310	4/28	23	12.5	.0	10.2	-
JAMNKE LAKE TRAIL	7200	4/27	20	8.7	.4	8.3	-
JOHNSON PARK	6450	4/28	2	.5	.0	5.5	-
JOSEPHINE LOWER #9	4900	5/02	27	11.6	4.4	18.9	-

CLARK FORK-BITTERROOT RIVERS

- A Black Pine - elevation 7,100 ft., in Lower Willow Creek drainage near Black Pine Lookout northwest of Philipsburg.
 B Combination - elevation 5,600 ft., in Lower Willow Creek drainage northwest of Philipsburg.
 C Peterson Meadows - elevation 7,200 ft. in Flint Creek drainage south of Georgetown Lake. USFS-SCS cooperative site.
 D Skalkaho Summit - elevation 7,250 ft., on Bitterroot-Rock Creek divide near Skalkaho Pass south of Philipsburg and west of Hamilton.



AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES

Canada

Water Survey of Canada, Calgary, Department of the Environment
 Water Resources Service, Department of Lands, Forests and Water Resources,
 British Columbia
 Alberta Environment, Edmonton, Alberta

Federal

Department of the Army - Corp of Engineers
 Department of Agriculture - Forest Service
 - Soil Conservation Service
 Department of Commerce - NOAA
 - National Weather Service
 Department of Interior - Bonneville Power Administration
 - Bureau of Indian Affairs
 - Bureau of Reclamation
 - Fish and Wildlife Service
 - Geological Survey
 - National Park Service

STATE AGENCIES

Montana Conservation Districts
 Montana Department of Fish and Game
 Montana Department of Natural Resources and Conservation
 Montana State University - Agricultural Experiment Station
 University of Montana - School of Forestry
 DNRC - State Forester

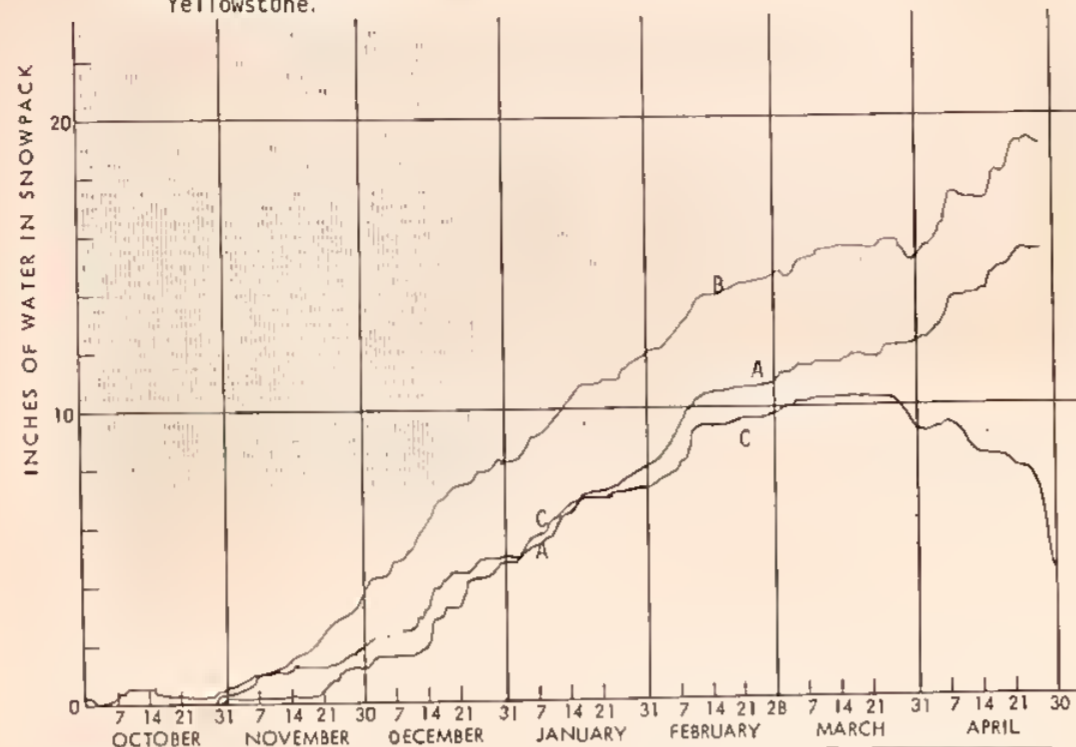
PRIVATE ORGANIZATIONS

Montana Power Company
 Butte Water Company
 The Anaconda Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

RUBY-MADISON RIVERS

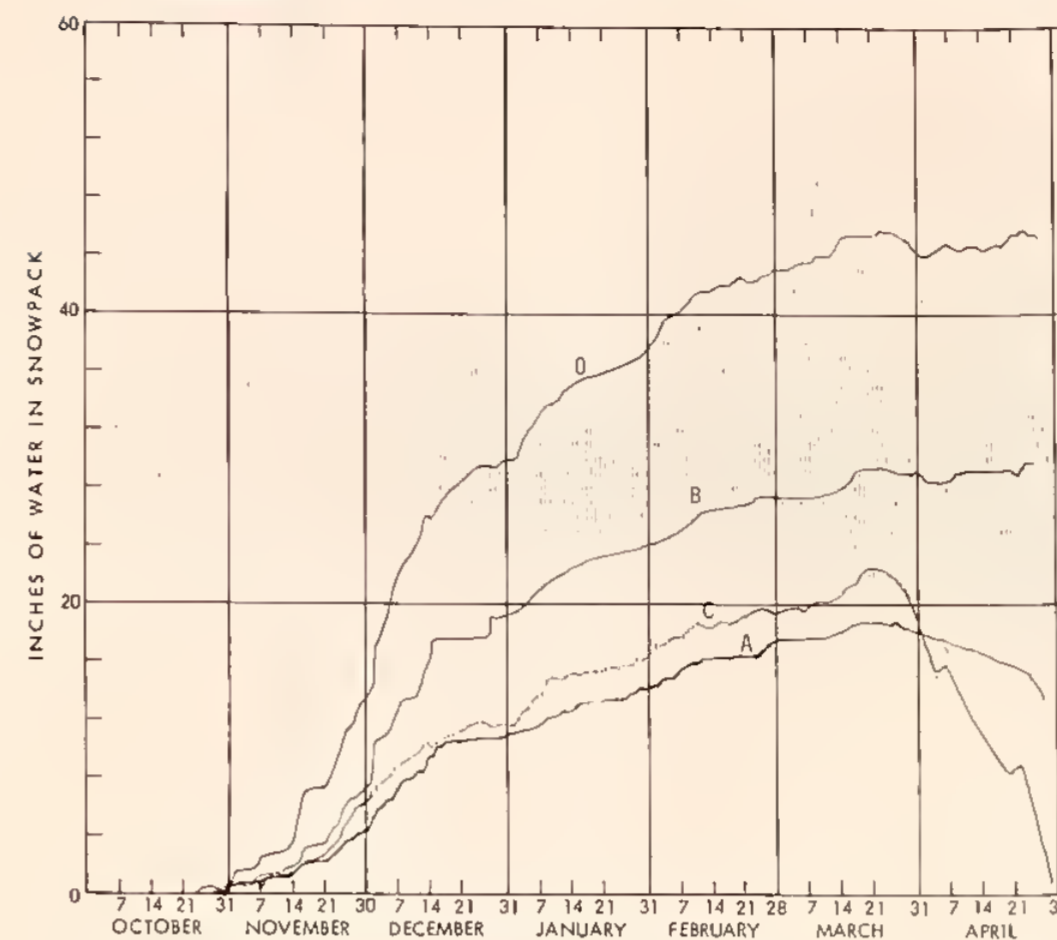
- A Divide - elevation 7,800 ft., near Ruby-Beaverhead River divide near Divide Guard Station south of Virginia City.
 B Teepee Creek, elevation 8,000 ft., in West Fork Madison River drainage West of West Yellowstone.
 C West Yellowstone - elevation 6,700 ft., in Madison River drainage at West Yellowstone.



SNOW	DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	PAST RECORD	
						Last Year	Average
KELLER CREEK	5300	4/26	0	.0	.0	.6	-
KING CREEK SAOULE	4550	5/01	0	.0	.0	-	-
KING SPRINGS	4150	5/01	0	.0	.0	-	-
KINGS HILL	7500	5/01	40	16.9	12.5	17.1	-
KIWANIS CAMP	3720	5/01	0	.0	.0	-	-
LAKE CAMP (WY)	7850	4/30	22	10.0	.0	8.4	-
LAKE CREEK	6100	4/28	6	2.4	.0	2.7	-
LAKEVIEW CANYON	6930	4/28	30	12.9	.0	12.2	-
LAKEVIEW RIDGE	7400	4/28	26	11.2	.0	10.0	-
LEMMI PASS	7480	4/28	22	8.8	.0	-	-
LEMMI RIDGE	8100	4/28	27	11.6	.0	-	-
LEMMI RIDGE PILLW	8100	4/28	SP	13.9	1.1	-	-
LICK CREEK	6860	4/27	12	4.9	4.0	11.1	-
LICK CREEK PILLW	6860	4/27	SP	2.5	.8	10.7	-
LITTLE PARK	7400	4/25	49	20.8	11.5	18.3	-
LOGAN CREEK	4300	4/26	0	.0	.0	2.7	-
LOLO PASS (10)	5230	4/26	54	25.4	8.0	32.3	-
LONE MOUNTAIN	8880	4/25	70	31.1	10.8	30.6	-
LOOKOUT (10)	9250	4/28	59	29.6	8.5	37.7	-
LOST HORSE	5940	4/28	74	35.0	15.0	34.3	-
LOST SOUL	4800	4/27	14	7.2	.0	8.9	-
LOWER TWIN	7900	4/28	51	22.2	8.8	26.0	-
LUBRECHT FLUME	4200	4/27	0	.0	.0	.0	-
LUBRECHT FOREST # 3	3450	4/27	0	.0	.0	4.0	-
LUBRECHT FOREST # 4	4650	4/27	0	.0	.0	.4	-
LUBRECHT FOREST # 6	4040	4/27	0	.0	.0	.0	-
LUBRECHT HYDROPLAT	4200	4/27	0	.0	.0	.0	-
LUPINE CREEK (WY)	7500	5/03	15	6.2	.0	7.7	-
MAUISON PLATEAU	7750	4/25	52	26.0	.0	22.4	-
MAUISON PLATEAU PILLW	7750	4/25	SP	27.7	3.4	23.7	-
MANY GLACIER	4960	5/02	21	10.4	.2	-	-
MANY GLACIER PILLW	4960	5/02	SP	7.4	.0	-	-
MARIAS PASS	5250	5/02	22	9.9	.6	19.3	-
MAYNARD CREEK	6210	4/26	52	23.5	12.1	21.6	-
MAYNARD CREEK PILLW	6210	4/26	SP	16.2	6.9	14.1	-
MIDDLE MILL CREEK	7650	5/01	38	18.4	5.8	18.4	-
MILL CREEK	7500	4/28	27	12.0	8.2	16.5	-
MINERAL CREEK	4000	5/01	16	5.9	.0	14.1	-
MISSION MOUNTAIN	5050	5/01	0	.0	.0	-	-
MONUMENT PLAK	8800	5/01	76	28.5	15.6	31.6	-
MOOSE CREEK (10)	6200	5/01	27	15.0	-	16.0	-
MOULTON RESERVOIR	6850	5/01	0	.0	.0	-	-
MOUNT ALLEN # 7	5700	5/02	81	38.4	21.4	50.1	-
MOUNT LOCKHART	6400	5/01	55	25.8	5.4	25.4	-
MOUNT LOCKHART PILLW	6400	5/01	SP	24.1	10.3	23.5	-
MUDROCK LAKE	7650	4/27	51	25.6	5.2	23.5	-
NEWTON MOUNTAIN	5600	4/27	79	36.0	12.9	-	-
NEZ PERCE CAMP	5580	4/29	25	12.4	4.4	12.5	-
NEZ PERCE CAMP PILLW	5580	4/29	SP	13.5	1.7	-	-
NEZ PERCE CREEK	6500	4/27	0	.0	.0	3.5	-
NEZ PERCE PASS	6570	4/29	29	15.0	2.1	15.6	-
NOISY BASIN	6040	4/28	126	54.9	40.4	-	-
NOISY BASIN PILLW	6040	4/28	SP	53.0	32.6	-	-
NOISY CREEK	5600	4/28	0	.0	.0	-	-
NORRIS BASIN (WY)	7500	5/01	15	7.2	.0	8.0	-
NORTH FK. CLK CREEK	6250	5/03	12	5.4	.0	11.8	-
NORTH FK. CLK CREEK PILL	6250	5/03	SP	6.9	.0	11.5	-

BITTERROOT-BIG HOLE RIVERS

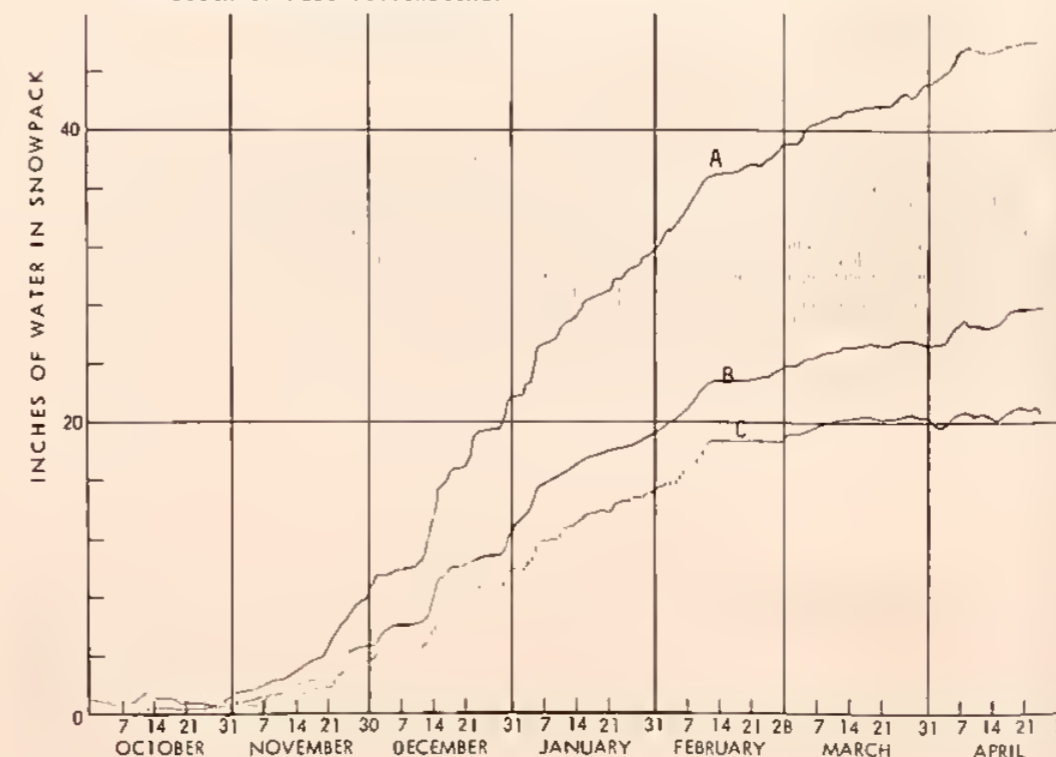
- A Nez Perce Camp - elevation 5,650 ft., in West Fork Bitterroot River drainage near Nez Perce Pass southwest of Darby.
 B Saddle Mountain - elevation 7,900 ft., in East Fork Bitterroot River drainage near Lost Trail Pass southeast of Darby and west of Wisdom.
 C Twelvemile Creek - elevation 5,600 ft., in Lost Horse Creek drainage southwest of Hamilton.
 D Twin Lakes - elevation 6,400 ft., in Lost Horse Creek drainage southwest of Hamilton.



SNOW	DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	PAST RECORD	
						Last Year	Average
NORTH FORK JOCKO	6350	4/27	99	52.1	28.7	51.3	-
NORTH MEADOW	7500	4/28	17	5.8	.6	11.5	-
NORTHEAST ENTRANCE	7400	5/01	16	6.8	.0	7.8	-
NORTHEAST ENTRANCE PILL.	7400	5/01	SP	5.2	.0	6.2	-
NOICH	8500	4/28	52	20.1	10.8	18.5	-
OLD FAITHFUL (WY)	7360	5/01	22	10.2	.0	-	-
OPHIR PARK	7150	4/30	45	22.0	.0	-	-
PALISADE CREEK	8250	4/27	77	39.5	11.6	34.2	-
PETERSON MEADOWS	7200	4/27	20	7.1	2.7	11.9	-
PETERSON MEADOWS PILLW	7200	4/27	SP	9.5	2.4	-	-
PICKFOOT CREEK	6650	4/26	21	10.2	-	-	-
PICKFOOT CREEK PILLW	6650	4/26	SP	-	-	-	-
PICNIC GROUNDS	6200	4/27	0	.0	.0	2.6	-
PILGRIM PASS # 6	5500	5/02	63	31.9	16.5	43.1	-
PIMESTON PASS	7200	4/27	0	.0	.0	6.1	-
POURMAN CREEK	5100	4/27	60	30.4	8.8	33.2	-
POURMAN CREEK PILLW	5100	5/01	SP	27.1	7.9	31.4	-
POMCUPINE	6500	4/28	18	7.0	5.8	8.0	-
POMCUPINE PILLW	6500	4/28	SP	4.8	.0	-	-
POTOMAGNOTON PARK	7150	5/02	22	10.7	.0	12.0	-
POTOMAGNOTON #8	5800	5/03	58	28.7	16.2	42.0	-
RED MOUNTAIN	6000	5/01	37	17.4	.0	21.0	-
RED TOP	5260	4/26	65	29.0	-	-	-
ROCK CREEK	5600	5/02	14	6.0	10.4	10.4	-
ROCK CREEK MEADOWS	8160	4/27	74	27.3	14.5	-	-
ROCKER PEAK	8000	4/24	44	17.6	5.8	18.0	-
ROCKER PEAK PILLW	8000	4/24	SP	16.6	18.6	20.1	-
ROCKY BOY	4700	5/28	5	1.4	.0	1.5	-
ROCKY BOY PILLW	4700	4/28	SP	5.0	.0	2.9	-

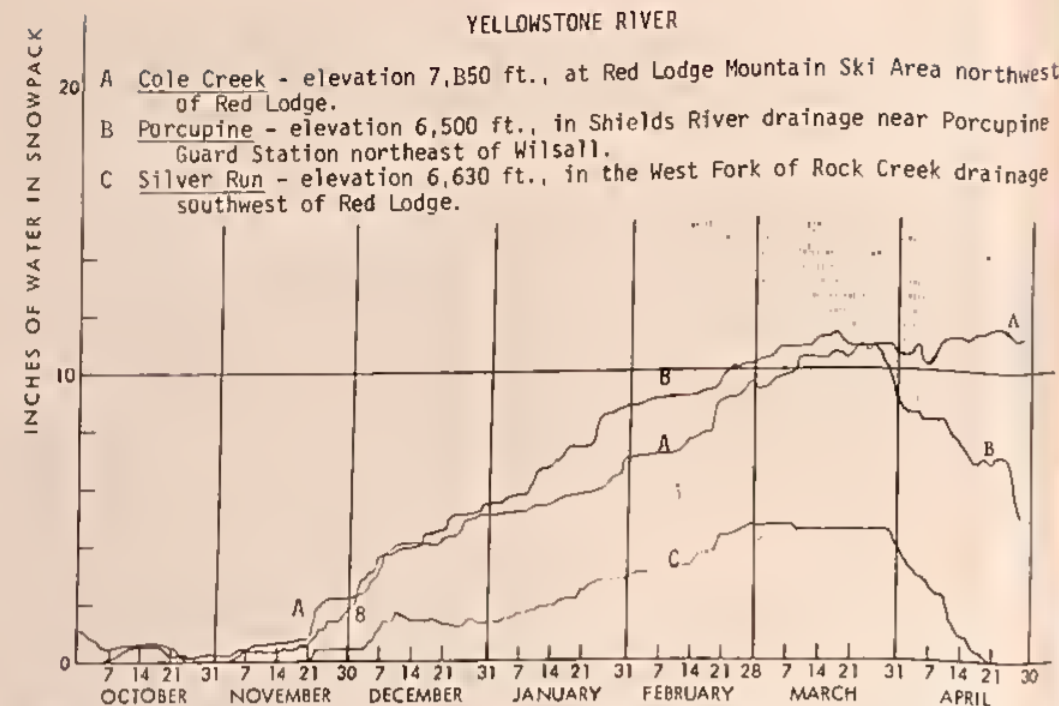
MADISON RIVER

- A Black Bear - elevation 7,950 ft., in the South Fork Madison River drainage near Montana-Idaho-Wyoming borderline south of West Yellowstone.
 B Madison Plateau - elevation 7,750 ft., in South Fork Madison River drainage south of West Yellowstone.
 C Whiskey Creek - elevation 6,800 ft., in South Fork Madison River drainage south of West Yellowstone.



SNOW	DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	PAST RECORD	
						Last Year	Average
SALAJARLA	6550	4/26	45	21.6	9.2	14.1	-
SAOULE MOUNTAIN	7940	4/26	62	31.4	10.2	28.8	-
SAOULE MOUNTAIN PILLW	7940	4/26	SP	30.8	10.8	30.2	-
SENTINEL CREEK (10)	8710	4/28	58	46.2	5.5	38.1	-
SENTINEL CREEK	8500	5/02	67	31.4	8.0	26.7	-
SHOWER FALLS	8100	4/27	71	30.7	20.3	28.7	-
SHOWER FALLS PILLW	8100	4/27	SP	29.8	14.0	32.2	-
SILVER RUN	6630	4/28	0	.0	.0	2.7	-
SILVER RUN PILLW	6630	4/28	SP	-	-	-	-
SKALKAHU SUMMIT	7260	4/29	58	28.8	9.4	28.0	-

SNOW SURVEYS



SNOW	DATE	INCHES	WATER CONTENT (%)	WATER EQUIVALENT (INCHES)
ST. MARY'S PASS	6600 4/27	30	12.5	3.8
STORM LAKE	7780 4/27	35	14.7	5.1
STUYKER BASIN	6180 4/27	84	34.8	20.2
STUART MILL	6500 4/27	0	0.0	0.0
STUART MOUNTAIN	7400 5/02	72	31.2	6.8
SUKER CREEK	3960 5/01	0	0.0	0.0
SUGARLOAF	7350 4/25	14	4.8	0.0
SYLVAN PASS (WY)	7100 5/01	22	11.0	0.0
TANGHEL PASS (ID)	7000 4/28	36	17.8	0.0
TAYLOR ROAD	4080 4/28	0	0.0	0.0
TEN MILE LOWER	6600 4/27	4	1.5	0.0
TEN MILE MIDDLE	6800 4/27	32	13.2	1.4
TEN MILE UPPER	8000 4/27	39	16.8	3.2
TEPEL CREEK	8000 4/28	59	22.6	5.0
TEPEL CREEK PILLON	8000 4/28	59	19.1	1.2
TIMBERLINE CREEK	8050 4/28	41	11.8	12.0
TRAIL CREEK	7090 4/28	18	7.0	0.0
TRIMMUS LAKE	6100 5/03	83	45.1	21.2
TV MOUNTAIN	6800 5/02	42	20.3	3.4
TWELVEMILE CREEK	5600 4/28	26	12.5	2.4
TWELVEMILE CREEK PILLON	5600 4/28	39	9.4	1.4
TWENTY-ONE MILE	7150 4/30	32	15.7	1.2
TWIN CREEKS	3580 5/03	0	0.0	0.0
TWIN LAKES	6510 4/28	95	48.2	20.9
TWIN LAKES PILLON	6400 4/28	59	45.1	17.1
UPPER HOLLAND LAKE	6200 5/03	74	40.0	13.2
VALLEY VIEW (ID)	6500 4/28	20	11.6	0.0
WALDON	5600 5/01	12	5.6	0.0
WALDON PILLON	5600 5/01	59	5.7	0.0
WARM SPRINGS	8250 5/01	50	23.0	0.0
WARM SPRINGS PILLON	8250 5/01	0	30.3	0.0
WASSEL DIVIDE	6450 4/24	79	35.8	15.7
WEST YELLOWSTONE	6700 4/29	18	8.2	0.0
WEST YELLOWSTONE PILLON	6700 5/01	59	5.4	0.0
WHISKEY CREEK	6800 4/25	48	25.3	0.0
WHISKEY CREEK PILLON	6800 4/25	59	20.8	0.0
WHITE ELEPHANT (ID)	7700 4/28	66	35.2	0.0
WHITE MILL	8700 4/28	86	37.1	14.4
WHITE MILL PILLON	8700 4/28	59	35.2	11.5
WHITE PINE RIDGE	8850 4/28	7	2.3	0.0
WILLOW CREEK	6500 4/28	0	0.0	0.0
WOLVERINE (WY)	7650 4/30	25	10.4	0.0
WRONG CREEK	5700 4/25	22	10.6	0.0
WRONG RIDGE	6800 4/26	48	22.3	7.4

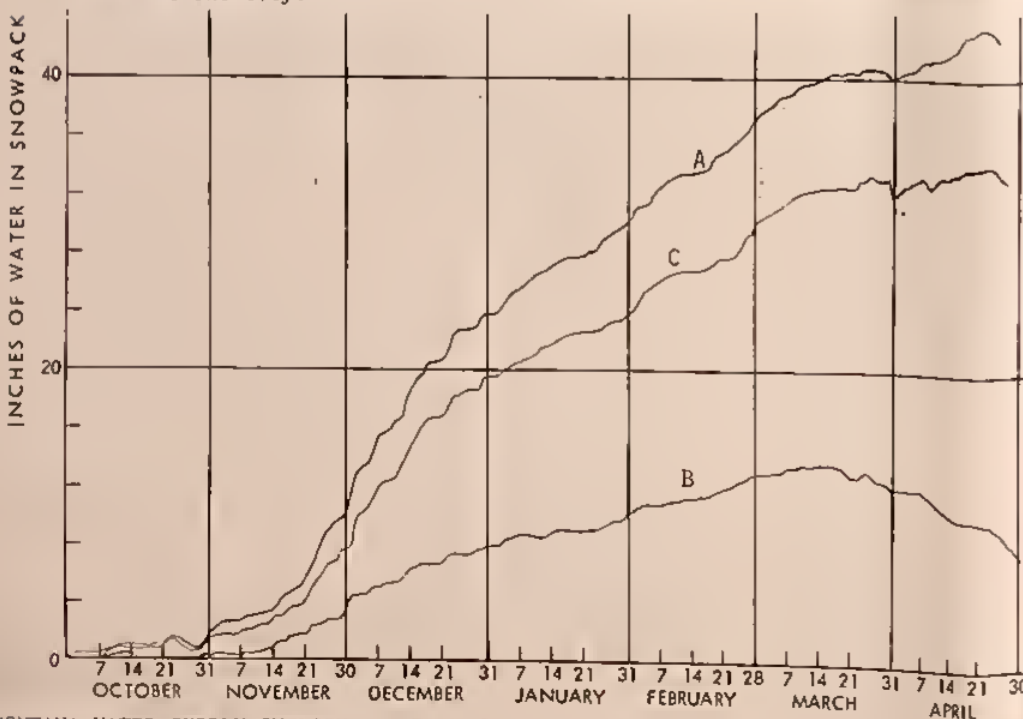
LATE ARRIVING DATA

East Boulder S	9250 5/04	87	37.5A	20.5	-
Picket Pin D	9450 5/04	63	25.0A	9.5	-
Placer Basin F	8800 5/04	51	20.5A	11.0	-
Star Lake E	9650 5/04	111	50.0A	27.0	-

Average based on 1958-72 period. A - Aerial observation; water content estimated. SP - Snow Pile observation; water content only.

YELLOWSTONE RIVER

- A Fisher Creek - elevation 9,100 ft., in Clark's Fork River drainage north-east of Cooke City.
 B Northeast Entrance - elevation 7,350 ft., at the Northeast Entrance to Yellowstone National Park, west of Cooke City.
 C White Mill - elevation 8,700 ft., in Clark's Fork River drainage northeast of Cooke City.



RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

RESERVOIR	THIS YEAR	LAST YEAR	AVERAGE
COLUMBIA			
Kootenai	5,694.0	1,865.0	2,291.0
Flathead	3,428.0	1,947.0	2,267.0
Hungry Horse	1,791.0	835.3	867.8
Gates (6)	45.2	15.3	17.6
Mission Valley (8)	100.3	70.6	67.2
Georgetown Lake	31.0	24.6	29.0
Lower Willow Creek	4.9	4.0	3.5
Nevada Creek	12.6	-	8.1
Noxon Rapids	334.6	234.3	314.2
Painted Rocks	31.7	32.2	14.2
Como	34.9	21.6	16.4

MISSOURI			
Beaverhead	84.0	74.9	65.6
Clark Canyon	257.2	183.8	179.6
Ruby	38.8	36.5	38.8
Madison	337.5	168.8	270.9
Ennis Lake	41.0	37.2	35.6
Middle Creek	8.0	4.5	6.7
Canyon Ferry	2,043.0	1,514.0	1,737.0
Hauser & Helena	61.9	63.0	60.5
Lake Helena	10.4	10.9	10.7
Holter Lake	81.9	79.6	81.1
Fort Peck Lake	18,910.0	16,390.0	15,880.0
Smith River	10.6	-	11.3
Newlan Creek	12.4	7.3	0.2
Bair	7.0	-	6.6
Martinsdale	23.1	-	18.4
Deadman's Basin	72.2	-	47.6
Gibson	99.0	48.4	76.5
Willow Creek	32.2	19.4	27.2
Pishkun	32.0	31.1	31.4
Lower Two Medicine	11.9	12.5	12.3
Four Horns	19.2	13.1	9.5
Swift	30.0	11.7	22.4
Lake Frances	111.9	42.5	77.1
Elwell (Tiber)	1,347.0	564.7	492.5
Beaver Creek	3.5	2.7	2.8
Pesno	127.2	129.8	68.6
Nelson	66.8	22.7	45.2

HUDSON BAY			
St. Mary's	66.2	41.9	23.2
YELLOWSTONE			
Stillwater	21.0	0.0	0.0
Clark's Fork	27.4	17.5	20.2
Tongue	68.0	30.2	57.0
Big Horn Lake	1,356.0	801.8	888.4

Average based on 1958-72 period.



SOIL MOISTURE	DATE	INCHES	WATER CONTENT (%)	WATER EQUIVALENT (INCHES)
DRAINAGE BASIN AND STATION				
Name	Elevation	Depth	Capacity	Water Content (%)
THIS YEAR	LAST YEAR	AVERAGE		

COLUMBIA RIVER DRAINAGE				
Kootenai	3800	48	7.5	5/1
Baree Trail	3000	48	22.6	5/1
Murphy Lake R. S.	3050	48	23.0	5/1
Flathead	5600	54	8.4	4/27
Deer Mountain	5250	54	6.3	4/17
Clark Fork	7100	48	10.0	4/28
Black Pine	4100	48	26.8	5/3
Lubrecht Forest	4030	48	11.9	-
Seeley Lake R. S.	7260	48	10.8	-
Skalkaho Summit	7100	48	7.1	4/28
Bitterroot	5250	48	10.6	4/29
Gibbons Pass				
Lolo Pass				

MISSOURI RIVER DRAINAGE				
Beaverhead	6700	48	15.3	4/28
Lakeview				
Madison	6700	48	6.5	5/1
West Yellowstone	7250	48	17.0	-
Bridge Bowl	4856	54	17.7	4/21
College Site No. 2	6860	48	18.8	4/27
Lick Creek	7150	48	10.0	5/1
Twenty-One Mile	3950	48	20.9	4/27
Milk	4700	36	10.1	-
Beaver Creek				
Rocky Boy				

YELLOWSTONE RIVER DRAINAGE				
Shields	6020	48	17.6	4/26
Battle Ridge				
Upper Yellowstone	7350	48	9.4	5/1
Northeast Entrance				
Clark's Fork	3700	48	20.7	-
PMC Dryland				

- Average for period of record.

Missouri River & Hudson Bay Drainages

JEFFERSON - SOME IMPROVEMENT IN THE RED ROCK HEADWATERS DURING APRIL. MOST HIGH ELEVATIONS HAVE AVERAGE OR ABOVE AVERAGE SNOWPACK. LOWER ELEVATIONS ARE GENERALLY BELOW AVERAGE. THE PIONEER MOUNTAINS HAVE ABOVE AVERAGE SNOWPACK.

MADISON - GENERALLY THE SNOWPACK IS AVERAGE OR ABOVE IN HIGH ELEVATIONS AND BELOW AVERAGE IN LOWER ELEVATIONS. THE AMOUNT OF WATER STORED IN THE SNOWPACK IN THE HEADWATERS AREAS ABOVE HEBGEN RESERVOIR IS ABOVE AVERAGE. THE SNOWFALL AT SOME HIGH ELEVATIONS EXCEEDED THE MELT DURING APRIL.

GALLATIN - THE HIGHER ELEVATIONS HAVE NEAR TO ABOVE AVERAGE SNOWPACK WITH MANY COURSES SHOWING AN INCREASE IN WATER CONTENT DURING THE PAST MONTH. SOME LOW ELEVATIONS SHOW BELOW AVERAGE SNOW AS A RESULT OF MELT DURING MARCH AND APRIL.

MISSOURI MAIN STEM - THE SNOW IS AVERAGE TO A LITTLE BELOW AVERAGE ALONG THE CONTINENTAL DIVIDE AND ABOVE AVERAGE IN THE BIG BELT MOUNTAINS. LOWER ELEVATIONS GENERALLY HAVE BELOW AVERAGE WATER CONTENTS.

MARIAS-TETON-SUN - THE HIGH ELEVATION SNOWPACK IS ABOUT AVERAGE IN THE SUN AND TETON RIVER HEADWATERS, BUT BELOW AVERAGE IN THE MARIAS RIVER HEADWATERS AND IN THE LOWER ELEVATIONS.

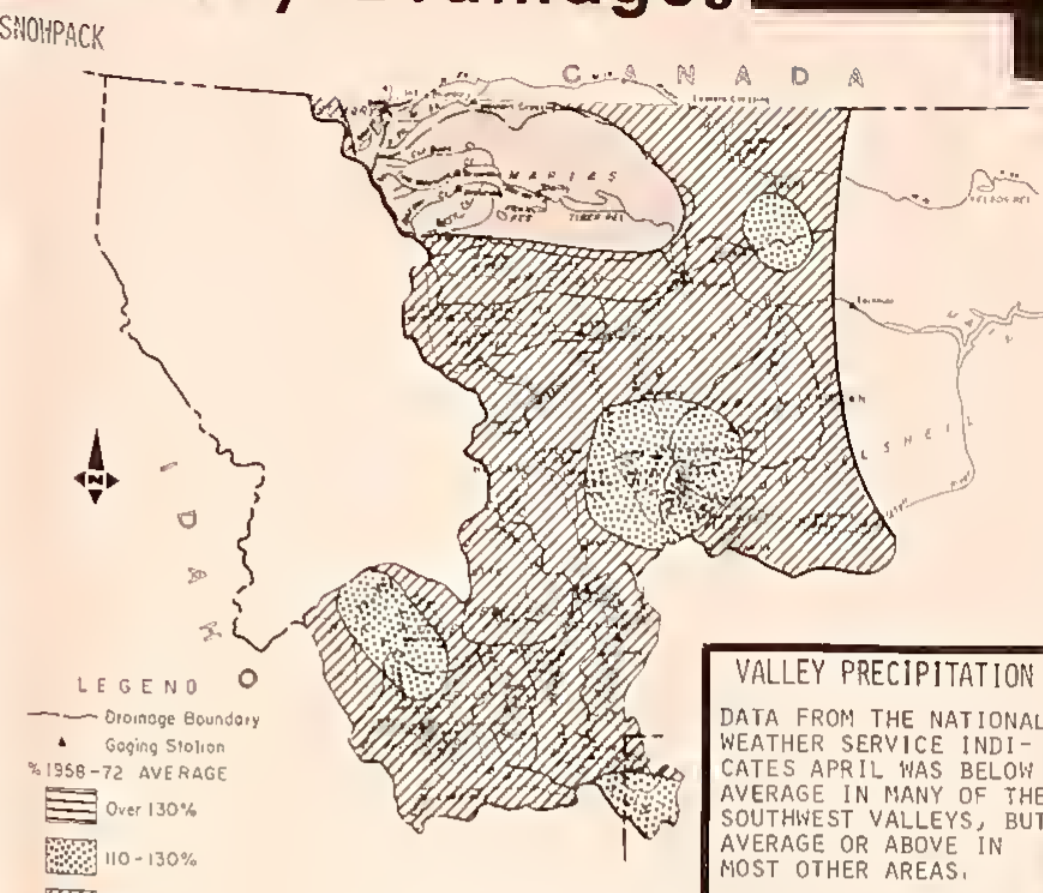
JUDITH-MUSSELSHELL - LOWER ELEVATION SNOWPACK IS GENERALLY NEAR OR BELOW AVERAGE WHILE MOST OF THE HIGHER ELEVATIONS SHOW ABOVE AVERAGE AMOUNTS OF WATER STORED IN THE SNOWPACK.

MILK - THE SNOW REMAINING IN THE HIGHER ELEVATIONS OF THE BEAR PAW MOUNTAINS IS ABOVE AVERAGE. SNOW HAS MELTED FROM MOST OF THE DRAINAGE.

ST. MARY'S - SOME MELTING OF LOWER ELEVATION SNOWPACK DURING APRIL. THE FIVE SNOW COURSES IN GLACIER PARK THAT ARE MEASURED ONLY ON MAY 1 SHOWED WELL BELOW AVERAGE AMOUNTS OF WATER.

SUMMARY OF SNOW MEASUREMENTS

RIVER BASIN AND SUBWATERSHED	Number of Courses	THIS YEAR'S SNOW WATER AS PERCENT OF 1958-72 AVERAGE	1958-72 AVERAGE
Beaverhead	14	502	109
Ruby	8	334	104
Big Hole	15	347	105
Boulder	8	581	76
Jefferson	45	395	103
Madison	20	449	104
Gallatin	17	212	100
Missouri Headwater	82	334	102
West-side Missouri (Toston-Cascade)	6	522	89
Smith & Belt	6	181	111
Missouri Main Stem	12	234	102
Teton & Sun	8	722	92
Marias	4	305	76
Marias-Teton-Sun	12	441	84
Judith	6	122	99
Musselshell	5	142	101
Judith-Musselshell	11	142	100
Milk	3	72	72
Bear Paws	2	117	117
MISSOURI (TOTAL)	120	296	100
Saskatchewan			
St. Mary's	7	206	67



LEGEND
 - Drainage Boundary
 - Gauging Station
 - 1958-72 AVERAGE
 - Over 130%
 - 110-130%
 - 90-110%
 - 70-90%
 - Under 70%

VALLEY PRECIPITATION
 DATA FROM THE NATIONAL WEATHER SERVICE INDICATES APRIL WAS BELOW AVERAGE IN MANY OF THE SOUTHWEST VALLEYS, BUT AVERAGE OR ABOVE IN MOST OTHER AREAS.

MISSOURI RIVER & HUDSON BAY DRAINAGES
 MONTANA
 MOUNTAIN SNOW WATER EQUIVALENT

MOUNTAIN SOIL MOISTURE
 SOME SOUTHWEST VALLEYS ARE STARTING TO DRY ENOUGH TO BEGIN FARMING OPERATIONS. ALL AREAS ABOVE THE VALLEY FLOORS ARE GENERALLY NEAR FIELD CAPACITY AS A RESULT OF RECENT RAINS AND SNOWMELT.

IRRIGATION WATER SUPPLIES
 LATE SEASON IRRIGATION WATER SUPPLIES ARE EXPECTED TO BE AVERAGE OR ABOVE ON MOST STREAMS. SOME SHORTAGES MAY DEVELOP LATER ON STREAMS IN THE MARIAS RIVER DRAINAGE THAT DO NOT HAVE RESERVOIR STORAGE. ALL STREAMS SHOULD HAVE PLENTY OF WATER IN THE EARLY SEASON.

WATER SUPPLY OUTLOOK

STREAM OR AREA	Spring	Summer
Beaverhead	avg	avg
Ruby	ex	ex
Big Hole	ex	ex
Boulder	ex	ex
Jefferson	ex	avg
Madison	ex	ex
Gallatin	ex	ex
West-side Missouri	ex	avg
Smith-Belt	ex	avg
Sun	avg	avg
Teton	avg	avg
Marias	avg	fair
Judith	ex	avg
Musselshell	ex	avg
Milk	ex	avg
Bear Paws	ex	avg
St. Mary's	avg	fair

STREAMFLOW FORECASTS

SPRING RUNOFF
 THE MELTING OF THE LOW ELEVATION SNOWPACK HAS SOMEWHAT REDUCED THE POTENTIAL FOR HIGH FLOWS FROM SNOWMELT. MOST STREAMS, EXCEPT FOR THE BIG HOLE AND GALLATIN RIVERS AND TRIBUTARIES FROM THE BELT MOUNTAINS, SHOULD BE ABLE TO CARRY THE SNOWMELT RUNOFF IN EXISTING STREAM CHANNELS.

PERIOD	THIS YEAR	PAST RECORD
May - September	108 102 40.0 106	91.0 103 23.0 88.3
October - December	84.0 99 84.5 70.0 100 70.0	66.0 103 61.1
January - March	13.6 104 13.1 11.3 104 10.9	76.2 76.2
April - June	15.7 93 16.8 14.0 94 14.9	14.9
July - September	467 110 256 425 355 111 171 319	358
October - December	850 115 473 507 485 115 422	422
January - March	26.0 98 26.5 22.0 97 22.7	22.7
April - June	41.5 100 41.5 35.6 100 35.5	35.5
July - September	565 112 505 480 114 420	420
October - December	2,320 110 949 2,104 1,995 112 699 1,781	1,781
January - March	22.7 116 15.4 19.5 19.5 116 13.1 16.8	16.8
April - June	505 91 181 556 460 91 157 507	507
July - September	140 122 115 130 124 105	105
October - December	3,600 112 3,227 2,995 113 2,660	2,660
January - March	203 90 226 192 90 213	213
April - June	108 91 119 92.0 90 102	102
July - September	430 88 35.2 486 410 88 18.0 465	465
October - December	4,140 109 3,799 3,520 110 3,199	3,199
January - March	15.3 110 13.9 14.2 112 12.7	12.7
April - June	4,550 110 4,150 3,900 111 3,512	3,512
July - September	6.4 125 5.1 5.3 126 4.2	4.2
October - December	56.0 126 48.5 53.0 127 41.7	41.7
January - March	4,350 111 3,936 3,800 112 3,407	3,407
April - June	200 90 4,105 4,000 112 3,567	3,567
July - September	4,550 111 10,352 9,800 112 8,787	8,787

SASKATCHEWAN RIVER BASIN

ST. MARY'S RIVER near Babb (14)	420 90 468 360 90 399
---------------------------------	-----------------------

- (1) Adjusted for storage in Lima and Clark Canyon Reservoirs.
- (2) Adjusted for storage in Hobgen Lake.
- (3) Adjusted for storage in Hobgen Lake and Ennis Lake.
- (4) Sum of West Fork Hyalite Creek and East Fork Hyalite Creek above Reservoir.
- (5) Adjusted for storage in Middle Creek Reservoir.
- (6) Adjusted for storage in Hobgen and Ennis Lakes and Clark Canyon Reservoir.
- (7) Adjusted for storage in Gibson Reservoir and diversions.
- (8) Adjusted for storage in Canyon Ferry Reservoir.
- (9) Adjusted for storage in Two Medicine Reservoir and diversions into Two Medicine Canal.

JEFFERSON - NEAR AVERAGE RUNOFF IS FORECAST FOR MOST STREAMS EXCEPT FOR SLIGHTLY ABOVE AVERAGE CONDITIONS ON THE BIG HOLE RIVER AND ITS TRIBUTARIES.

MADISON - ABOVE AVERAGE RUNOFF IS FORECAST ON ALL TRIBUTARIES. HEBGEN RESERVOIR WILL HELP MODERATE DOWNSTREAM FLOWS DURING THE MAIN SNOWMELT PERIOD.

GALLATIN - EXCEPT FOR NEAR AVERAGE RUNOFF FROM THE HYALITE DRAINAGE, ALL STREAMS IN THE DRAINAGE SHOULD HAVE ABOVE AVERAGE STREAMFLOW.

MISSOURI MAIN STEM - GENERALLY NEAR AVERAGE RUNOFF FROM TRIBUTARIES WITH HEADWATERS ALONG THE CONTINENTAL DIVIDE AND ABOVE AVERAGE FROM STREAMS DRAINING THE BELT MOUNTAINS. THE MISSOURI RIVER IS FORECAST TO HAVE ABOUT 10 PERCENT ABOVE AVERAGE RUNOFF.

MARIAS-TETON-SUN - MOST STREAMS SHOULD PRODUCE ABOUT 10 PERCENT LESS THAN NORMAL RUNOFF.

JUDITH-MUSSELSHELL - ABOVE AVERAGE RUNOFF IS FORECAST FOR MOST STREAMS.

MILK - NATURAL RUNOFF PLUS DIVERSIONS FROM THE ST

U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE
WATER SUPPLY OUTLOOK
FOR
MONTANA

and
FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS
Collaborating with
MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF
MAY 15, 1978



Issued by
R. M. DAVIS
ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D. C.

Released by
VAN K. HADERLIE
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
Bozeman, Montana

In Cooperation with
J. A. ASLESON
DIRECTOR
Montana Agricultural Experiment Station

Report prepared by

PHILLIP E. FARNES, Snow Survey Supervisor
DONALD J. HUFFMAN, Hydrologist
CINDY L. ONDRAK, Statistical Clerk

SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P.O. Box 98
BOZEMAN, MONTANA 59715

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Montana Water Supply Outlook

SIGNIFICANT AMOUNTS OF SNOWFALL AND RAIN HAVE OCCURRED IN HIGH ELEVATIONS DURING THE FIRST TWO WEEKS OF MAY.

SNOW PILLWOW READINGS AT SOME HIGHER ELEVATION SITES IN SOUTHERN MONTANA INDICATE AN INCREASE OF 1 TO 2 INCHES OF SNOW WATER EQUIVALENT (SWE) SINCE THE FIRST OF MAY. HOWEVER, MOST OTHER HIGH ELEVATION SITES SHOW A NET DECREASE IN THE PAST TWO WEEKS OF 1 TO 5 INCHES SWE. THIS IS SLIGHTLY LESS THAN NORMAL FOR MID-MAY.

MANY HIGH ELEVATIONS STILL HAVE SUBSTANTIAL SNOWPACK. THE DEEPEST SNOW DEPTHS FOR MID-MAY WERE RECORDED AT THE STAR LAKE SNOW COURSE IN THE BEARTOOTH MOUNTAINS, WHERE NEARLY TEN FEET OF SNOW REMAINS ON THE GROUND.

MANY OTHER AREAS REPORT SNOW DEPTHS OF 6 TO 8 FEET WITH APPROXIMATELY HALF OF THE SNOWPACK BEING WATER.

MOST LOWER ELEVATIONS HAVE EXPERIENCED GRADUAL MELT. MANY VALLEY AREAS HAVE RECEIVED FAIR AMOUNTS OF SPRING PRECIPITATION.

TEMPERATURES IN HIGHER ELEVATIONS HAVE REMAINED NEAR OR BELOW FREEZING, RISING ABOVE FREEZING ONLY DURING MID-DAY. THESE COOL TEMPERATURES HAVE SLOWED DOWN THE HIGH ELEVATION SNOWMELT.

IN GENERAL THE WATER SUPPLY CONDITIONS HAVE IMPROVED SINCE THE FIRST OF MAY.

MOST MAJOR STREAMS HAVE NOT REACHED THEIR SNOWMELT PEAK. FLOWS IN SOME STREAMS HAS INCREASED DUE TO RAINFALL RUNOFF.



COLUMBIA RIVER DRAINAGE

SNOWMELT IN LOWER ELEVATIONS HAS BEEN GRADUAL OVER THE PAST TWO WEEKS. SOME MELT HAS STARTED IN HIGHER ELEVATIONS. MUCH OF THE SNOWMELT AT HIGHER ELEVATIONS HAS BEEN REPLACED BY NEW SNOWFALL. MANY HIGH ELEVATION SNOW PILLWOWS SHOW A NET LOSS OF 1 TO 2 INCHES OF SNOW WATER EQUIVALENT IN THE PAST 15 DAYS. MANY LOW ELEVATION SNOW COURSES ARE BARE. THIS IS NORMAL FOR THIS TIME OF YEAR.

STREAMFLOWS ARE EXPECTED TO HOLD UP WELL THIS SPRING IN THE BITTERROOT, BLACKFOOT, CLARK FORK, AND THE SOUTH FORK OF THE FLATHEAD RIVERS. THIS IS A RESULT OF GOOD HIGH ELEVATION SNOWPACK FOR THIS TIME OF THE YEAR.

VOLUME FORECASTS ARE NOT ISSUED AFTER MAY 1, HOWEVER, CLIMATIC CONDITIONS OVER THE PAST TWO WEEKS DO NOT INDICATE ANY SIGNIFICANT CHANGE IN THE MAY 1 FORECASTS.

MOST MAJOR STREAMS IN THE DRAINAGE ARE EXPECTED TO REACH THEIR SNOWMELT PEAK NEAR THE END OF MAY.

SOME STREAMS WITH LOWER ELEVATION HEADWATERS ARE NOW REACHING THEIR SNOWMELT PEAK.



Exposed ridges are now starting to bare-off in high elevation watersheds. Many areas still have 8 to 10 feet of snow in the protected areas.

MISSOURI RIVER DRAINAGE

SOME SNOW PILLWOWS IN SOUTHERN AREAS OF THE DRAINAGE SHOW MORE WATER STORED IN THE SNOWPACK THAN WAS MEASURED ON MAY 1. SOME MELT HAS OCCURRED IN HIGH ELEVATIONS, BUT NEW SNOWFALL HAS EXCEEDED MELT. MOST HIGH ELEVATIONS HAVE SHOWN A NET LOSS OF 3 TO 5 INCHES OF SNOW WATER CONTENT. MANY LOWER ELEVATIONS HAVE EXPERIENCED GRADUAL MELT AND MANY OF THESE SNOW COURSES ARE BARE OR NEARLY BARE.

AREAS NORTH AND WEST OF GREAT FALLS CONTINUE TO HAVE BELOW AVERAGE SNOW CONDITIONS. IN MOST SOUTHERN AND CENTRAL MOUNTAIN DRAINAGES HIGH ELEVATION SNOWPACK WILL HELP MAINTAIN GOOD STREAMFLOW INTO THE SUMMER MONTHS.

THE WATER SUPPLY OUTLOOK HAS NOT CHANGED SIGNIFICANTLY SINCE MAY 1, HOWEVER CONDITIONS IN SOME SOUTHERN TRIBUTARIES MAY HAVE IMPROVED SLIGHTLY DURING THE PAST TWO WEEKS.

IN THE SOUTHWEST PART OF THE DRAINAGE THE MADISON RIVER IS EXPECTED TO REACH ITS SNOWMELT PEAK NEAR THE END OF MAY. THE BIG HOLE AND JEFFERSON RIVERS ARE PREDICTED TO REACH THEIR PEAK SNOWMELT IN EARLY JUNE WITH THE GALLATIN RIVER PEAKING NEAR MID-JUNE.

OTHER SNOWFED STREAMS IN CENTRAL MONTANA AND THE NORTHWEST PORTION OF THE DRAINAGE ARE EXPECTED TO REACH THEIR SNOWMELT PEAKS NEAR THE END OF MAY OR IN EARLY JUNE.



A snow surveyor prepares to take a snow sample at one of the stations on a snow course. Normally, a snow course has 10 sample points. The average of these measurements is reported as the snow depth and water content. Generally, for every 10 inches of snow depth there is 4½ to 5 inches of water. The mid-May snowpack is nearing 50 percent density.

YELLOWSTONE RIVER DRAINAGE

SNOW CONTINUES TO FALL IN HIGHER ELEVATIONS IN THE DRAINAGE. DURING THE PAST TWO WEEKS THE SNOWFALL HAS BEEN GREATER THAN MELT AT MANY HIGH ELEVATION SNOW PILLWOWS AND SNOW COURSES.

LOWER ELEVATIONS HAVE GENERALLY SNOWN UNIFORM MELT AND SOME OF THESE SITES HAVE BECOME BARE.

THE WATER SUPPLY OUTLOOK HAS IMPROVED SLIGHTLY SINCE THE MAY 1 REPORT. STREAMFLOW IS EXPECTED TO HOLD UP INTO THE SUMMER MONTHS. THIS IS A RESULT OF THE GOOD, HIGH ELEVATION SNOWPACK RELEASING WATER TO FEED THE RIVER SYSTEM.

THE YELLOWSTONE ABOVE LIVINGSTON, STILLWATER AND BOULDER RIVERS ARE EXPECTED TO REACH THEIR SNOWMELT PEAK ABOUT MID-JUNE. THE YELLOWSTONE RIVER DOWNSTREAM FROM LIVINGSTON SHOULD REACH ITS SNOWMELT PEAK A LITTLE BEFORE MID-JUNE. ROCK CREEK IS EXPECTED TO PEAK A LITTLE AFTER MID-JUNE.

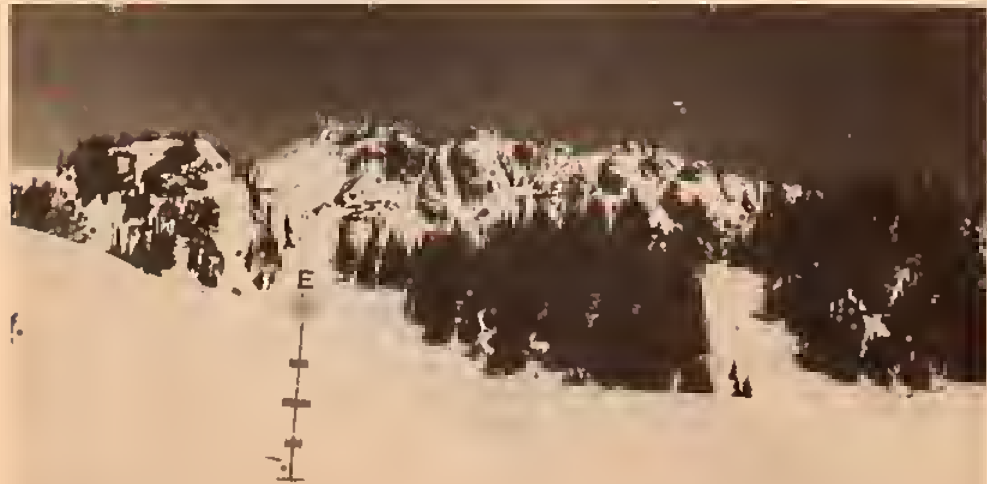


SNOW SURVEY DATA

SNOW

DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	Average
NAME				Last Year		
ARCH FALLS	7350	5/16	26	11.2	.0	14.5
BALD EAGLE PEAK	5700	5/16	101	49.6	21.1	62.6
BANFIELD MOUNTAIN	5600	5/15	24	12.4	.0	15.5
BANFIELD MOUNTAIN PILLOW	5600	5/15	SP	10.6	.0	13.8
BAHEL CREEK	5500	5/16	61	33.9	7.9	42.6
BAHEL MIDWAY	4600	5/16	28	14.8	1.6	24.5
BAHEE TRAIL	5000	5/16	0	.0	.0	.0
BASIN CREEK	7180	5/15	14	4.4	-	-
BATTLE RIDGE	6020	5/15	0	.0	.0	-
BLACK BEAR	7950	5/15	0	49.5	2.0	-
BLACK BEAR PILLOW	7590	5/15	SP	42.2	2.3	-
BLACK PINE	7100	5/15	21	10.4	.0	9.7
BLACK PINE PILLOW	7100	5/15	SP	13.3	.0	10.8
BOIS SOTS	8000	5/15	13	4.8	.0	-
BRIDGER BOWL	7250	5/15	63	32.0	7.9	31.9
BRIDGER BOWL PILLOW	7250	5/15	SP	31.9	6.8	30.1
BRISTOW CREEK	3900	5/15	0	.0	.0	-
CALVERT CREEK PILLOW	6450	5/15	SP	.0	.0	-
CAMP MISERY	6400	5/17	118	60.4	36.6	-
CAMP SENIA	7890	5/15	29	9.3	1.1	8.3
CANROT BASIN	9000	5/11	96	44.6	13.6	-
CANROT BASIN PILLOW	9000	5/11	SP	36.4	12.2	-
CEVAR GROVE	4100	5/16	0	.0	.0	1.7
COLL CREEK	7850	5/16	41	15.8	2.0	-
COLL CREEK PILLOW	7850	5/15	SP	14.0	1.4	-
COMBINATION	5600	5/15	0	.0	.0	-
COMBINATION PILLOW	5600	5/15	SP	.0	.0	-
COOKE STATION	8150	5/11	62	28.3	8.0	17.9
COPPER BOTTOM	5200	5/15	0	.0	-	-
COPPER BOTTOM PILLOW	5200	5/15	SP	.6	.0	-
COPPER CAMP	6950	5/15	0	30.0	-	-
COPPER MOUNTAIN	7700	5/15	16	6.9	-	8.4
DAVIS CREEK	5400	5/15	22	11.8	.0	12.7
DEADMAN CREEK	6450	5/12	10	5.1	.0	6.2
DEADMAN CREEK PILLOW	6450	5/12	SP	4.7	.0	3.2
DEVILS SLIDE	8100	5/16	63	27.4	15.7	28.0
DISCOVERY BASIN	7050	5/15	6	2.7	.0	-
DIVIDE	7800	5/15	0	9.5	.0	-
DIVIDE PILLOW	7800	5/15	SP	10.7	1.0	-
EAST BOULDER S	9250	5/15	90	41.5A	17.0	-
FISH CREEK	8000	5/15	29	9.1	-	-
FISHER CREEK	9100	5/11	110	49.2	21.0	36.2
FISHER CREEK PILLOW	9100	5/11	SP	44.7	19.2	37.6
FOURTH OF JULY	3450	5/17	0	.0	.0	-
FRIDAY HILL	4620	5/17	1	.6	.0	-
GARVER CREEK	4250	5/15	0	.0	.0	.0
GARVER CREEK PILLOW	4250	5/15	SP	.0	.0	-
GRAVEL CREEK	4300	5/12	16	7.2	.0	9.2
GRAVEL CREEK PILLOW	4300	5/12	SP	5.9	.0	-
HAWKINS LAKE	6450	5/15	61	29.0	7.1	30.4
HAWKINS LAKE PILLOW	6450	5/15	SP	27.3	7.5	30.6
HEART LAKE TRAIL	4800	5/17	6	2.8	-	10.2
HOOD MEADOW	6600	5/15	5	2.4	.0	7.5
HOODOO BASIN	6000	5/17	86	43.7	-	48.8
HOODOO CREEK	5900	5/17	79	39.2	-	45.5
KINGS HILL	7500	5/12	43	18.2	6.9	-
LEMHI RIDGE	8100	5/15	0	11.5	.0	-
LEMHI RIDGE PILLOW	8100	5/15	SP	12.3	.0	-
LICK CREEK	6860	5/15	0	.0	.0	7.0
LICK CREEK PILLOW	6860	5/15	SP	.0	.0	6.0
LOST SOUL	4800	5/15	0	.0	.0	.8
MAYNARD CREEK	6210	5/15	30	14.2	.0	16.3
MAYNARD CREEK PILLOW	6210	5/15	SP	11.3	.9	12.1
MEATON MOUNTAIN	5600	5/17	57	27.8	7.0	-
MOIST BASIN	6040	5/17	110	58.6	35.5	-
NOISY BASIN PILLOW	6040	5/17	SP	47.0	27.4	-
NOISY CREEK	3600	5/17	0	.0	-	-
NORTH FK. ELK CREEK	6250	5/16	3	.8	-	-
NORTH FK. ELK CREEK PILL	6250	5/16	SP	.4	-	5.3
NORTH FORK JOCKO	6330	5/16	62	44.5	20.6	45.7
NORTHEAST ENTRANCE	7400	5/11	16	6.8	.0	3.6
NORTHEAST ENTRANCE PILL.	7400	5/11	SP	6.0	.0	3.7
PETERSON MEADOWS	7200	5/15	14	5.9	.5	-
PETERSON MEADOWS PILLOW	7200	5/15	SP	8.3	.4	-
PICKET PILL	9450	5/15	81	35.0A	6.5	-
PLACER BASIN F	8800	5/15	66	28.5A	5.0	-
POORMAN CREEK	5100	5/16	40	20.9	.0	23.4
POORMAN CREEK PILLOW	5100	5/15	SP	21.9	.5	23.4
RED MOUNTAIN	6000	5/15	28	14.3	.0	17.2
RED TOP	5260	5/17	43	21.4	-	-
ROCKY PEAK	8000	5/15	0	22.0	.0	16.7
ROCKY PEAK PILLOW	8000	5/15	SP	22.5	5.5	19.3
SADDLE MOUNTAIN	7940	5/15	0	31.0	5.0	27.2
SADDLE MOUNTAIN PILLOW	7940	5/15	SP	31.5	7.2	28.6
SHOWER FALLS	8100	5/16	72	32.7	18.3	31.3
SHOWER FALLS PILLOW	8100	5/16	SP	31.6	16.3	30.6
SILVER RUN	6630	5/15	0	.0	.0	-
SILVER RUN PILLOW	6630	5/15	SP	.0	.0	-

Average based on 1958-72 period. A - Aerial observation; water content estimated.
SP - Snow Pillow observation; water content only.



Aerial markers are observed from small fixed wing aircraft flying over the snowfields. The snow depth is determined by noting the snow line on the crossblades of the marker. The snow depth on this photograph is 73 inches. The snow water equivalent is estimated by using the density from nearby snow courses. There are 13 aerial markers in Montana.

SNOW

DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	PAST RECORD	
					Last Year	Average
NAME						
SKALKAHO SUMMIT	7260	5/16	52	25.2	3.0	24.9
SKALKAHO SUMMIT PILLOW	7260	5/16	SP	25.9	3.4	-
SPUR PARK	8000	5/12	68	30.4	10.4	24.9
SPUR PARK PILLOW	8100	5/12	SP	30.6	11.7	24.3
STAHL PEAK	6150	5/12	100	45.9	18.7	39.0
STAHL PEAK PILLOW	6050	5/12	SP	40.7	16.3	-
STAR LAKE L	7650	5/15	115	55.0A	-	-
STUART MOUNTAIN	7400	5/17	70	35.1	3.7	31.2
TIMBERLINE CREEK	8850	5/15	50	16.5	4.8	18.8
TV MOUNTAIN	6800	5/17	34	16.6	1.8	18.5
TWIN LAKES	6510	5/15	0	45.5	13.2	42.2
TWIN LAKES PILLOW	6400	5/15	SP	41.0	11.1	39.9
WEASEL DIVIDE	5450	5/12	62	30.4	3.0	32.6
WEST YELLOWSTONE PILLOW	6700	5/12	SP	.0	.0	1.9
WHISKEY CREEK	6000	5/12	26	14.4	.0	-
WHISKEY CREEK PILLOW	6800	5/12	SP	13.5	.0	-
WHITE MILL	8700	5/11	90	40.0	14.5	29.3
WHITE MILL PILLOW	8700	5/11	SP	35.2	11.2	-

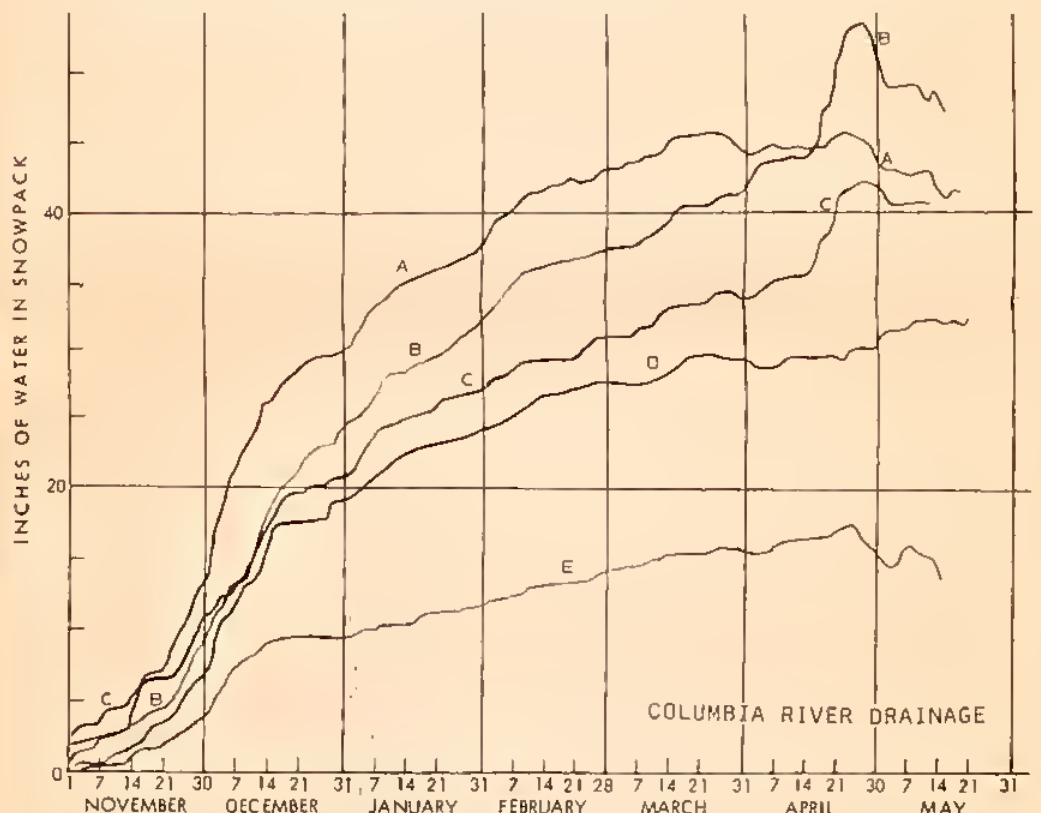
LATE ARRIVING DATA

Badger Pass	6900	5/18	76	38.8	16.0	-
Blue Lake	5900	5/18	34	17.1	0.0	-
Gunsight Lake	6300	5/18	75	39.3	17.2	-
Hell Roaring Divide	5770	5/17	48	24.5	6.4	26.7
Lookout (ID)	5250	5/15	43	22.5	.4	30.9
Trinkus Lake	6100	5/18	78	43.0	15.0	-
Twin Creeks	3580	5/18	0	0.0	0.0	-
Upper Holland Lake	6200	5/18	57	30.2	7.3	-

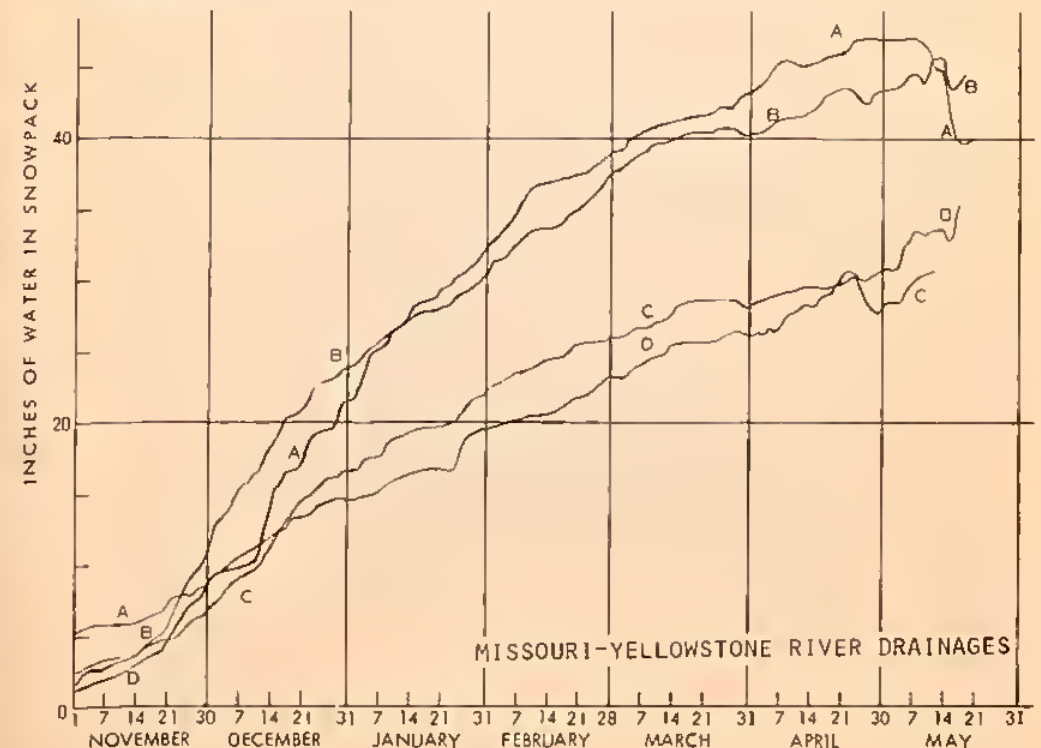
Average based on 1958-72 period. A - Aerial observation; water content estimated.
SP - Snow Pillow observation; water content only.

SNOW PILLOW RECORDS

- A TWIN LAKES - ELEVATION 6,400 FT., IN LOST HORSE CREEK DRAINAGE SOUTHWEST OF HAMILTON.
- B NOISY BASIN - ELEVATION 6,040 FT., IN NOISY CREEK DRAINAGE EAST OF KALISPELL.
- C STAHL PEAK - ELEVATION 6,030 FT., IN GRAVE CREEK DRAINAGE EAST OF EUREKA.
- D SADDLE MOUNTAIN - ELEVATION 7,900 FT., IN EAST FORK BITTERROOT RIVER DRAINAGE NEAR LOST TRAIL PASS SOUTHEAST OF DARBY AND WEST OF WISDOM.
- E BLACK PINE - ELEVATION 7,100 FT., IN LOWER WILLOW CREEK DRAINAGE NEAR BLACK PINE LOOKOUT NORTHWEST OF PHILIPSBURG.



- A BLACK BEAR - ELEVATION 7,950 FT., IN THE SOUTH FORK MADISON RIVER DRAINAGE NEAR MONTANA-IDAHO-WYOMING BORDERLINE SOUTH OF WEST YELLOWSTONE.
- B FISHER CREEK - ELEVATION 9,100 FT., IN CLARK'S FORK RIVER DRAINAGE NORTH-EAST OF COOKE CITY.
- C SPUR PARK - ELEVATION 8,100 FT., NEAR SHEEP CREEK-BELT CREEK-JUDITH RIVER-MUSSELSHELL RIVER DIVIDE NORTHEAST OF WHITE SULPHUR SPRINGS.
- D SHOWER FALLS - ELEVATION 8,100 FT., IN HYALITE CREEK DRAINAGE SOUTH OF BOZEMAN.



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FIRST CLASS MAIL

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FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS
Collaborating with
MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF
JUNE 1, 1978



Montana Water Supply Outlook

THE MOUNTAIN SNOWPACK IS GENERALLY ABOVE AVERAGE IN HIGHER ELEVATIONS. SHORT PERIODS OF MELT COMBINED WITH LONGER PERIODS OF BELOW FREEZING TEMPERATURES AND NEW SNOWFALL, HAVE HELPED MAINTAIN A GOOD SNOWPACK FOR JUNE 1.

MANY AREAS HAVE ABOUT THE SAME AMOUNT OF WATER STORED IN THE SNOWPACK AS THEY HAD NEAR MAY 15. THE GOOD SNOWPACK IN THE HIGH COUNTRY WILL HELP KEEP STREAMFLOWS UP WELL INTO THE SUMMER.

PRECIPITATION IN THE PAST TWO WEEKS HAS BEEN GOOD IN MOST AREAS WITH HEAVY AMOUNTS IN SOME AREAS.

SNOWMELT PEAKS HAVE BEEN DELAYED BY COOL WEATHER NEAR THE END OF MAY.

MOST STREAMS SHOULD HAVE PEAK SNOWMELT RUNOFF WITHIN THE NEXT THREE TO FOUR WEEKS. THE WATER SUPPLY CONDITIONS REMAIN GOOD FOR MOST AREAS WITH SOME IMPROVEMENT NOTED IN THE PAST 15 DAYS, PARTICULARLY IN SOUTHERN PORTIONS OF THE STATE.

Issued by
R. M. DAVIS
ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

Released by
VAN K. HADERLIE
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
Bozeman, Montana

In Cooperation with
J. A. ASLESON
DIRECTOR
Montana Agricultural Experiment Station

Report prepared by
PHILLIP E. FARNES, Snow Survey Supervisor
DONALD J. HUFFMAN, Hydrologist
CINDY L. ONDRAK, Statistical Clerk

SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715



COLUMBIA RIVER DRAINAGE

HIGH ELEVATION SNOW COURSES HAVE SHOWN BOTH INCREASES AND MELT OVER THE PAST 15 DAYS. CURRENT AMOUNTS OF WATER STORED IN THE SNOWPACK ARE GENERALLY ABOVE AVERAGE. MOST OF THE SNOW IN LOWER ELEVATIONS HAS MELTED.

STREAMS STARTED TO INCREASE THEIR FLOWS FROM SNOWMELT ABOUT MAY 22-24 AND THEN COOLER WEATHER RETARDED MELT.

STREAMS ARE PRESENTLY RISING WITH MELT WATER CAUSED BY WARMER TEMPERATURES. STREAMS THAT DID NOT REACH THEIR SNOWMELT PEAK IN LATE MAY SHOULD HAVE THEIR PEAK RUNOFF FROM SNOWMELT AROUND JUNE 7-10. HIGHER ELEVATION WATERSHEDS IN THE BITTERROOT AND FLATHEAD DRAINAGES MAY PEAK SLIGHTLY LATER.

WATER SUPPLY CONDITIONS HAVE IMPROVED A LITTLE SINCE MAY 15, PARTICULARLY WITH RESPECT TO LATE SEASON IRRIGATION SUPPLIES. THE ONLY FORECAST ISSUED FOR JUNE 1, IS FOR THE BITTERROOT RIVER NEAR DARBY, FOR WHICH JUNE THROUGH SEPTEMBER RUNOFF IS FORECAST TO BE ABOUT 22 PERCENT ABOVE AVERAGE.

MISSOURI RIVER DRAINAGE

NEW SNOWFALL KEEPS RAISING THE SNOWPACK LEVELS, BUT HAVE GENERALLY FOLLOWED SHORT MELT PERIODS THAT HAVE REDUCED THE AMOUNT OF WATER CONTAINED IN THE SNOWPACK. IN SOME AREAS NEW SNOWFALLS HAVE OCCURRED UP TO JUNE 1, AND IN GENERAL, THE HIGH ELEVATION SNOWPACK HAS ABOVE AVERAGE WATER CONTENT.

THE WATER SUPPLY CONDITIONS HAVE IMPROVED SLIGHTLY IN THE PAST TWO WEEKS OVER MOST OF THE DRAINAGE. THIS IS PRIMARILY DUE TO COOL TEMPERATURES WHICH HAVE RETARDED SNOWMELT AND TO NEW SNOWFALLS IN HIGHER ELEVATIONS.

THE COOL WEATHER HAS ALSO DELAYED PEAK SNOWMELT RUNOFF. THE PEAK INFLOW TO HEBGEN RESERVOIR SHOULD OCCUR IN EARLY JUNE, WHILE MOST OTHER STREAMS IN SOUTHWESTERN HEADWATERS CAN BE EXPECTED TO PEAK AROUND MID-JUNE OR A LITTLE LATER.

STREAMS IN CENTRAL MONTANA AND NORTHWESTERN PORTIONS OF THE DRAINAGE THAT DID NOT REACH THEIR PEAK AFTER MID-MAY SHOULD HAVE PEAK SNOWMELT RUNOFF IN EARLY JUNE.

YELLOWSTONE RIVER DRAINAGE

HIGH ELEVATIONS SHOW SIGNIFICANT INCREASES IN WATER CONTENT BETWEEN PERIODS OF MELT. THE LOSS OF WATER FROM THE HIGH ELEVATION SNOWPACK HAS BEEN QUITE SMALL OVER THE PAST TWO WEEKS.

SOME ADDITIONAL SNOW READINGS TAKEN IN THE BEARTOOTH MOUNTAINS NEAR GOOSE LAKE, NORTH OF COOKE CITY, SHOW SNOW DEPTHS OF 130 INCHES AND NEARLY 70 INCHES OF WATER CONTENT. MELT FROM THIS SNOW WILL PROVIDE FLOW IN THE YELLOWSTONE RIVER AND ITS TRIBUTARIES WELL INTO THE SUMMER.

THE WATER SUPPLY OUTLOOK HAS IMPROVED SLIGHTLY OVER THE PAST TWO WEEKS. THE DRAINAGE ABOVE COONEY RESERVOIR, THAT HAS HAD A DEFICIENT SNOWPACK ALL WINTER, HAS RECEIVED GOOD SNOW AND RAINFALL IN THE LAST TWO WEEKS. THE LARGEST SNOW WATER CONTENT OF THE SEASON AT THE COLE CREEK SNOW COURSE OCCURRED AROUND MAY 20.

MOST STREAMS HAVING HIGH ELEVATION HEADWATERS SHOULD REACH THEIR SNOWMELT PEAK NEAR OR SOON AFTER MID-JUNE. ROCK CREEK COULD PEAK APPROXIMATELY A WEEK AFTER MID-JUNE.



Many streams are flowing nearly bank-full with snow-melt water. Here, a Parshall flume is used to measure the amount of water flowing past the streamgage station. A recorder is used to maintain a continuous record of the depth of water in the flume.

SNOW SURVEY DATA

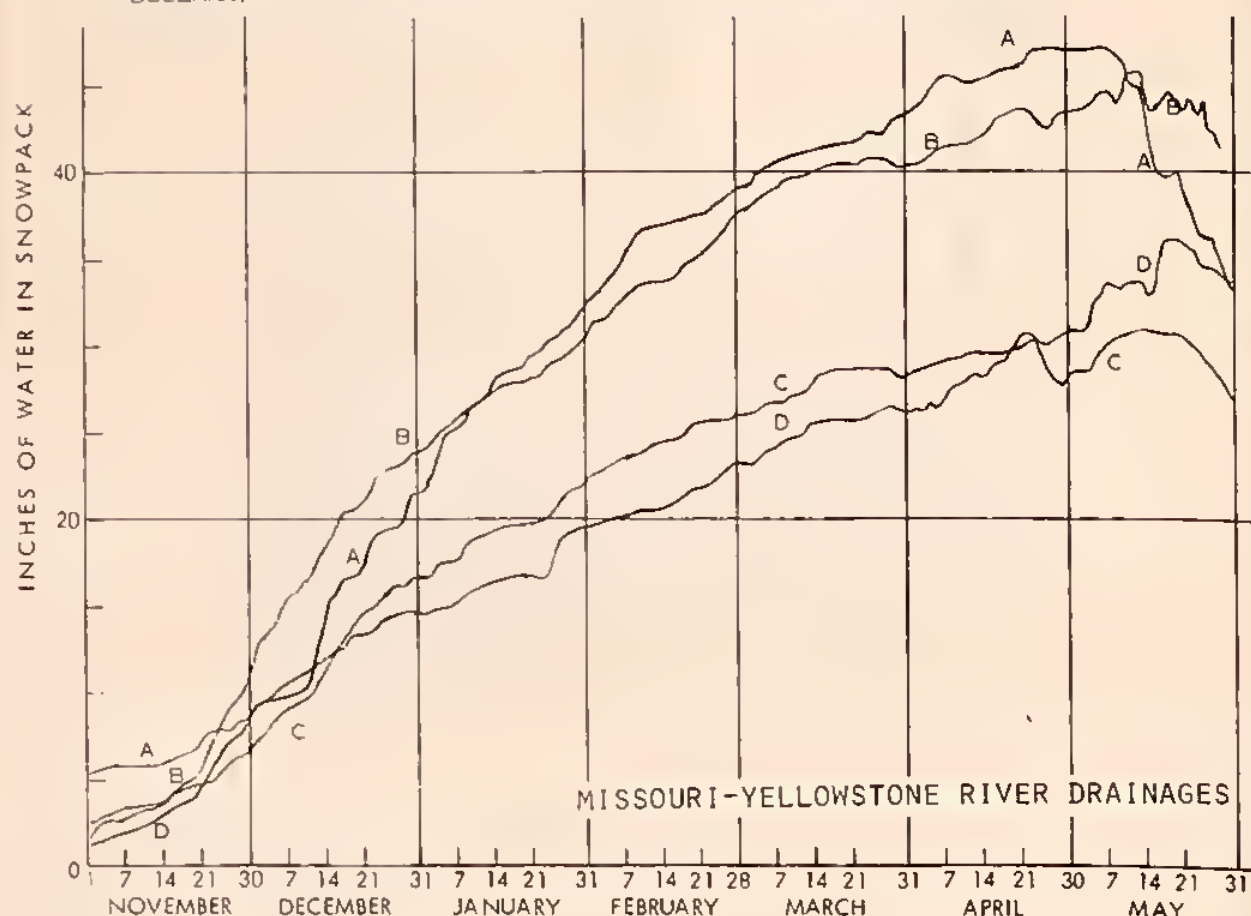
SNOW	DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
						Last Year	Average
NAME							
ARCH FALLS	7350	5/31	28	11.0	.0	9.2	
BAUGER PASS	6900	5/31	90	37.8	12.1	-	
BALD EAGLE PEAK	5700	5/31	84	43.4	-	45.9	
BANFIELD MOUNTAIN	5600	5/31	8	4.4	.0	4.1	
BANFIELD MOUNTAIN PILLOW	5600	6/01	SP	1.7	.0	1.3	
BASIN CREEK	7180	5/30	1	2.4	-	-	
BATTLE RIDGE	6020	6/01	U	.0	-	-	
BIG CREEK	5100	5/25	U	.0	.0	-	
BIG CREEK	6750	6/02	107	58.2	26.9	46.5	
BIG SKY	7700	5/29	10	4.5	-	-	
BLACK BEAR	7950	6/01	U*	36.0	3.4	-	
BLACK BEAR PILLOW	7590	6/01	SP	33.5	.0	-	
BLACK PINE	7100	5/30	12	5.4	.0	3.0	
BLACK PINE PILLOW	7100	6/02	SP	9.9	.0	2.3	
BLUE LAKE	5900	5/30	32	11.6	.0	-	
BRIDGER BOUL	7250	5/31	54	26.8	5.5	22.8	
BRIDGER BOUL PILLOW	7250	5/31	SP	25.5	2.9	18.8	
BRISTOW CREEK	5900	5/30	U	.0	-	-	
CALVERT CREEK	6450	6/01	U*	.0	.0	-	
CALVERT CREEK PILLOW	6450	6/01	SP	.0	.0	-	
CAMP MISERY	6400	6/01	116	52.6	32.0	-	
CEDAR GROVE	4100	5/31	U	.0	-	.0	
COLE CREEK	7850	6/02	47	18.4	.0	-	
COLL CREEK PILLOW	7850	6/02	SP	19.6	.0	-	
COMBINATION	5600	5/30	U	.0	.0	-	
COMBINATION PILLOW	5600	5/30	SP	.0	.0	-	
COOKE STATION	6150	5/30	41	22.1	.0	10.9	
COPPER BOTTOM	5200	6/01	U*	.0	.0	-	
COPPER BOTTOM PILLOW	5200	6/01	SP	.0	.0	-	
COPPER CAMP	6950	6/01	U*	2.4	.0	-	
DAVIS CREEK	5400	5/30	U	.0	-	1.8	
DEADMAN CREEK	6450	6/01	U*	.0	.0	.0	
DEADMAN CREEK PILLOW	6450	6/01	SP	.0	.0	.0	
DEVILS SLICE	8100	5/31	69	30.2	11.8	23.8	
DIVIDE	7800	6/01	U*	.0	.0	-	
DIVIDE PILLOW	7800	6/01	SP	.0	.1	-	
FATTY CREEK	5500	6/02	27	14.5	2.2	7.6	
FISH CREEK	8000	5/30	29	10.1	2.2	-	
FISHER CREEK	9100	5/30	92	46.9	23.0	32.1	
FISHER CREEK PILLOW	9100	5/30	SP	41.2	20.2	32.4	
FOURTH OF JULY	3450	5/30	U	.0	-	-	
FRIDAY HILL	4620	5/30	U	.0	-	-	
FROHNER MEADOWS	6480	5/30	U	.0	.0	-	
FROHNER MEADOWS PILLOW	6480	5/30	SP	.0	.0	-	
GARVER CREEK	4250	5/30	U	.0	-	-	
GARVER CREEK PILLOW	4250	6/01	SP	.0	.0	-	
GIBBONS PASS	7100	5/31	36	18.6	.0	8.6	
GRAVE CREEK	4300	5/25	U	.0	.0	1.6	
GRAVE CREEK PILLOW	4300	5/25	SP	.0	.0	-	
GUNSIGHT LAKE	6300	5/31	75	37.3	11.6	-	
HARRIS LAKE	6450	5/30	51	25.0	.0	20.2	
HARRIS LAKE PILLOW	6450	6/01	SP	22.4	1.0	20.4	
HELL ROARING DIVIDE	5770	6/01	36	19.4	.0	12.6	
HIGHWOOD DIVIDE	5650	5/25	U	.0	.0	-	
HIGHWOOD STATION	4600	5/25	U	.0	.0	-	
HOOD PLACER	6600	5/31	1	.2	.0	1.8	
HOODOO BASIN	6000	5/31	75	39.2	2.5	34.9	
HOODOO CREEK	5900	5/31	74	36.9	.0	33.5	
KINGS HILL	7500	5/31	35	12.8	.0	-	
LARK CREEK	6100	6/01	U	.0	-	-	

Average based on 1958-72 period. A - Aerial observation; water content estimated.
SP - Snow Pillow observation; water content only.
* Data estimated from SNOTEL



SNOW PILLOW RECORDS

- A **BLACK BEAR** - ELEVATION 7,950 FT., IN THE SOUTH FORK MADISON RIVER DRAINAGE NEAR MONTANA-IDAHO-WYOMING BORDERLINE SOUTH OF WEST YELLOWSTONE.
B **FISHER CREEK** - ELEVATION 9,100 FT., IN CLARK'S FORK RIVER DRAINAGE NORTH-EAST OF COOKE CITY.
C **SPUR PARK** - ELEVATION 8,100 FT., NEAR SHEEP CREEK-BELT CREEK-JUDITH RIVER-MUSSELSHELL RIVER DIVIDE NORTHEAST OF WHITE SULPHUR SPRINGS.
D **SHOWER FALLS** - ELEVATION 8,100 FT., IN HYALITE CREEK DRAINAGE SOUTH OF BOZEMAN.

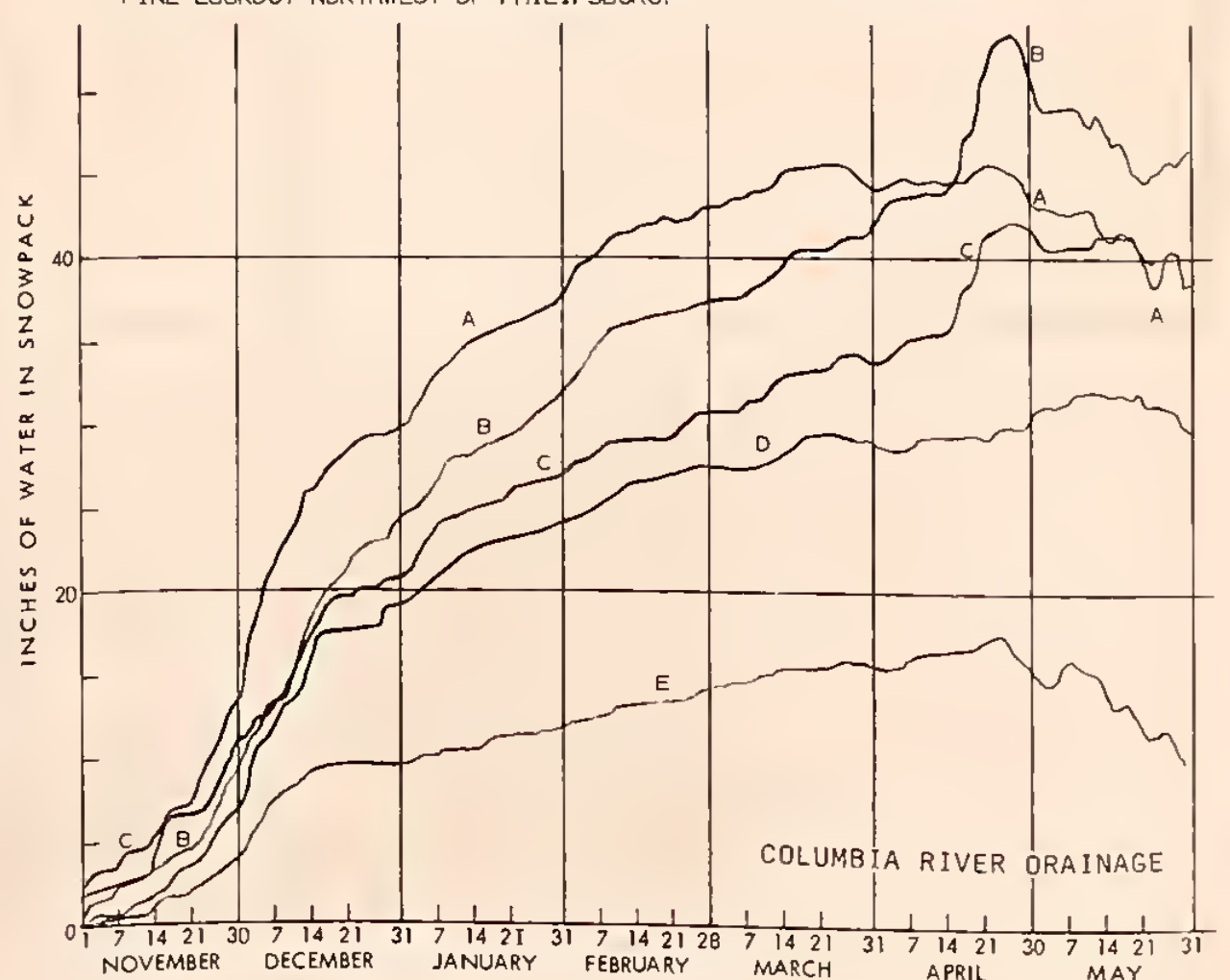


SNOW	DRAINAGE BASIN and/or SNOW COURSE	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	PAST RECORD	
						Water Content (Inches)	
						Last Year	Average
NAME							
LEMHI RIDGE	8100	6/01	U*	5.5	-	-	
LEMHI RIDGE PILLOW	8100	6/01	SP	6.0	.0	-	
LICK CREEK	6860	5/31	U	.0	.0	.4	
LICK CREEK PILLOW	6860	5/31	SP	.1	.0	.2	
LOOKOUT (ID)	5250	5/30	29	14.3	.0	15.8	
LOST SOUL	4800	5/30	U	.0	-	.0	
MAYNARD CREEK	6210	5/31	10	4.1	.0	5.4	
MAYNARD CREEK PILLOW	6210	5/31	SP	3.9	.0	4.0	
NEWTON MOUNTAIN	5600	5/30	46	24.0	-	-	
NOISY BASIN	6040	6/01	SP	45.6	19.8	-	
NOISY BASIN PILLOW	6040	6/01	U	.0	-	-	
NOISY CREEK	3600	6/01	U	.0	-	-	
NORTH FK. ELK CREEK	6250	6/02	U	.0	.0	-	
NORTH FORK JOCKO	6330	5/31	74	41.1	12.0	32.0	
NORTHEAST ENTRANCE	7400	5/30	1	.4	.0	.2	
NORTHEAST ENTRANCE PILL.	7400	5/30	SP	.0	.0	.0	
OPHIR PARK	7150	5/31	33	15.6	-	-	
PETERSON MEADOWS	7200	5/30	19	5.6	.0	-	
PETERSON MEADOWS PILLOW	7200	5/30	SP	7.5	.0	-	
POORMAN CREEK	5100	5/31	16	9.1	.0	8.5	
POORMAN CREEK PILLOW	5100	6/01	SP	10.3	.0	6.2	
PORCUPINE	6500	6/01	U	.0	-	-	
PORCUPINE PILLOW	6500	6/01	SP	.0	.0	-	
RED MOUNTAIN	6000	6/01	16	7.8	-	4.9	
RED TOP	5260	5/30	29	14.2	-	-	
ROCKER PEAK	8000	5/30	36	15.8	-	9.2	
ROCKER PEAK PILLOW	8000	5/30	SP	20.1	3.0	14.3	
ROCKY BOY	4700	5/27	U	.0	.0	-	
ROCKY BOY PILLOW	4700	5/27	SP	.0	.0	.0	
SADDLE MOUNTAIN	7940	5/31	60	29.8	5.8	18.7	
SADDLE MOUNTAIN PILLOW	7940	5/31	SP	29.7	6.7	19.8	
SHOWER FALLS	8100	5/31	78	34.3	13.0	27.5	
SHOWER FALLS PILLOW	8100	5/31	SP	33.4	12.4	24.3	
SILVER RUN	6630	6/01	U	.0	.0	-	
SILVER RUN PILLOW	6630	6/01	SP	.0	.0	-	
SKALKAKO SUMMIT	7260	5/26	46	23.6	.4	14.6	
SKALKAKO SUMMIT PILLOW	7260	5/26	SP	26.6	1.7	-	
SPUR PARK	8000	6/01	U*	24.5	7.2	16.1	
SPUR PARK PILLOW	8100	6/01	SP	24.1	8.3	17.5	
STAHL PEAK	6050	5/25	93	44.8	13.0	30.6	
STAHL PEAK PILLOW	6050	5/25	SP	39.9	11.3	-	
STAR LAKE E	9650	5/30	109	56.9	-	-	
STUART MOUNTAIN	7400	6/01	58	30.0	3.7	20.3	
TEPEL CREEK	8000	6/01	31	14.0	.0	-	
TEPEL CREEK PILLOW	8000	6/01	SP	9.4	.0	-	
TRINKUS LAKE	6100	5/31	67	36.5	10.4	-	
TV MOUNTAIN	5800	6/01	32	15.9	1.8	9.9	
TWELVEMILE CREEK	5600	5/30	U	.0	.0	.6	
TWELVEMILE CREEK PILLOW	5600	5/30	SP	.0	.0	.0	
TWIN LAKES	6510	6/01	U*	40.0	9.2	31.4	
TWIN LAKES PILLOW	6400	6/01	SP	38.6	3.4	28.1	
UPPER HOLLAND LAKE	6200	5/31	58	28.8	.9	-	
WARM SPRINGS	8250	6/01	54	23.0	-	-	
WARM SPRINGS PILLOW	8250	6/01	U	32.8	-	-	
WEASEL DIVIDE	5450	5/25	48	25.7	.0	19.6	
WEST YELLOWSTONE PILLOW	6700	6/01	SP	.0	.0	.0	
WHISKEY CREEK	6800	6/01	U*	2.5	.0	-	
WHISKEY CREEK PILLOW	6800	6/01	SP	2.3	.0	-	
WHITE MILL	8700	5/30	74	38.4	11.8	24.5	
WHITE MILL PILLOW	8700	5/30	SP	28.5	4.3	-	

Average based on 1958-72 period. A - Aerial observation; water content estimated.
SP - Snow Pillow observation; water content only.
* Data estimated from SNOTEL



- A **TWIN LAKES** - ELEVATION 6,400 FT., IN LOST HORSE CREEK DRAINAGE SOUTHWEST OF HAMILTON.
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E **BLACK PINE** - ELEVATION 7,100 FT., IN LOWER WILLOW CREEK DRAINAGE NEAR BLACK PINE LOOKOUT NORTHWEST OF PHILIPSBURG.



SNOW SURVEY DATA

CORRECTIONS TO PREVIOUSLY PUBLISHED DATA

Many of the snow survey measurements published in the Water Supply Outlook have been telephoned into the Snow Survey Office. Sometimes, the original notes are not received in time to check additions and subtractions. Also, some surveys are made too

late for the information to be published.

This table shows the corrected data for 1978 snow surveys. The underlined value is the corrected data.

SNOW		THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

JANUARY

Chessman Reservoir	6200	1/03	16	<u>3.0</u>	1.3	1.3
Holbrook	4530	12/26	40	<u>7.5A</u>	4.0	4.3
Ten Mile Middle	6800	12/30	33	<u>7.2</u>	2.0	4.9

FEBRUARY

Northeast Entrance	7400	2/02	41	<u>10.6</u>	4.1	6.6
Twenty-One Mile	7150	1/27	52	<u>15.8</u>	4.4	12.7

MARCH

Copper Bottom	5200	3/02	42	<u>11.3</u>	6.8	11.1
Copper Camp	6950	3/02	83	<u>30.4</u>	9.6	30.3
Copper Creek	5700	3/02	50	<u>14.9</u>	4.7	15.4
Copper Lake Creek	6100	3/02	74	<u>25.2</u>	7.4	22.6
Emery Creek	4350	2/28	44	<u>14.9</u>	7.6	-
Hebgen Dam	6550	3/01	54	<u>18.8</u>	5.9	10.8
Kings Hill	7500	2/28	53	<u>16.0</u>	7.6	12.5
Shower Falls	8100	2/27	72	<u>23.9</u>	14.7	21.6
Ten Mile Lower	6600	2/25	<u>30</u>	7.4	1.9	6.9
Thumb Divide (WY)	7900	2/28	62	20.3	3.3	19.0
TV Mountain	6800	2/28	63	<u>19.3</u>	5.5	17.0

APRIL

Chessman Reservoir	6200	3/29	11	<u>3.4</u>	3.2	3.3
Cottonwood Creek	6400	4/03	<u>23</u>	<u>7.0</u>	6.5	-
Darkhorse Lake	8600	3/28	80	<u>32.5</u>	13.6	28.0
Fred Burr Pass	8000	3/29	65	<u>26.0</u>	15.9	28.2
Hebgen Dam	6550	3/28	39	<u>17.2</u>	7.8	11.6
Kishenehn	3890	3/29	19	<u>5.6</u>	2.8	8.4
Lubrecht Hydroplot	4200	3/29	<u>1</u>	<u>.3</u>	1.6	3.2
Stemple Pass	6600	3/28	33	<u>11.8</u>	8.8	11.4
Ten Mile Middle	6800	3/27	37	<u>12.6</u>	7.6	12.6
Trinkus Lake	6100	4/03	93	<u>44.0</u>	38.3	46.5
TV Mountain	6800	3/30	51	<u>20.9</u>	11.5	20.3

MAY 1

Badger Pass	6900	5/03	74	<u>38.9</u>	20.2	46.2
Baree Creek	5500	5/01	71	<u>38.0</u>	18.7	49.6
Big Snowy	7150	5/02	66	<u>30.5</u>	25.0	24.9
Blue Lake	5900	5/03	39	<u>19.6</u>	5.8	26.5
Calvert Creek	6450	4/26	23	<u>11.5</u>	.0	9.2
Cole Creek	7850	4/28	<u>30</u>	9.2	15.5	-
Coyote Hill	4200	4/26	25	<u>11.1</u>	12.9	16.2
Fourth of July	3450	4/27	14	<u>5.2</u>	.0	-
Freight Creek	6000	5/03	30	<u>13.4</u>	.0	15.9
Friday Hill	4620	4/27	26	<u>12.8</u>	.0	-
Newton Mountain	5600	4/27	79	<u>36.4</u>	12.9	-
Picket Pin O	9450	5/04	63	<u>26.5A</u>	9.5	-
Placer Basin F	8800	5/04	51	<u>21.5A</u>	11.0	-
Red Top	5260	4/26	65	<u>29.5</u>	-	-
Rock Creek	5600	5/02	14	<u>6.2</u>	10.4	10.4
Ten Mile Lower	6600	4/27	4	<u>1.4</u>	.0	6.0
Upper Holland Lake	6200	5/03	<u>75</u>	<u>35.9</u>	13.2	41.1

MAY 15

Blue Lake	5900	5/18	34	<u>17.6</u>	.0	-
Gunsight Lake	6300	5/18	75	<u>39.5</u>	17.2	-
Trinkus Lake	6100	5/18	78	<u>42.8</u>	15.0	-
Upper Holland Lake	6200	5/18	<u>58</u>	<u>30.2</u>	7.3	-

Average based on 1958-72 period. A - Aerial observation; water content estimated.
SP - Snow Pillow observation; water content only.



Even though most valley areas have lost their winter's snowpack, many high elevations continue to have a substantial snow cover on the ground. The melting of this snowpack provides Montana with one of its most valuable resources -- water. Some high elevation areas may be snow-free for only a month or two before a new blanket of snow starts to accumulate.

RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average
COLUMBIA					
Kootenai	Koocanusa	5,694.0	3,206.0	2,291.0	-
Flathead	Hungry Horse	3,428.0	2,580.0	2,267.0	2,639.0
	Flathead Lake	1,791.0	1,473.0	867.8	1,481.0
	Camas (4)	45.2	17.2	17.6	36.3
	Mission Valley (B)	100.3	94.8	67.2	63.7
Clark Fork	Georgetown Lake	31.0	27.5	29.0	25.6
	Lower Willow Creek	4.9	-	-	4.1
	Nevada Creek	12.6	-	8.1	12.1
	Noxon Rapids	334.6	266.3	314.2	243.9
Bitterroot	Painted Rocks	31.7	33.0	14.2	32.4
	Como	34.9	-	16.4	29.1
MISSOURI					
Beaverhead	Lima	84.0	70.6	65.6	60.2
	Clark Canyon	257.2	182.7	179.6	149.5
Ruby	Ruby	38.8	-	38.8	37.7
Madison	Hebgen Lake	337.5	226.1	270.9	287.1
	Ennis Lake	41.0	37.1	35.6	36.9
Callatin	Middle Creek	8.0	7.2	6.7	7.0
Missouri	Canyon Ferry	2,043.0	1,704.0	1,737.0	1,652.0
	Hauser & Helena	61.9	63.0	60.5	57.9
	Lake Helena	10.4	10.9	10.7	9.1
	Holter Lake	81.9	74.7	81.1	73.7
	Fort Peck Lake	18,910.0	17,640.0	15,880.0	13,920.0
Smith	Smith River	10.6	-	11.3	10.8
	Newlan Creek	12.4	10.1	1.7	-
Musselshell	Bair	7.0	-	6.6	6.7
	Martinsdale	23.1	-	18.4	16.6
	Oeadman's Basin	72.2	-	47.6	57.0
Sun	Gibson	99.0	77.3	76.5	92.8
	Willow Creek	32.2	28.2	27.2	28.1
	Pishkun	32.0	31.7	31.4	28.8
Marias	Lower Two Medicine	11.9	12.4	12.3	-
	Four Horns	19.2	11.6	9.5	-
	Swift	30.0	11.1	22.4	27.7
	Lake Frances	111.9	75.2	77.1	94.6
Milk	Elwell (Tiber)	1,347.0	598.7	492.5	691.1
	Beaver Creek	3.5	-	-	-
	Fresno	127.2	118.5	68.6	102.1
	Nelson	66.8	40.6	45.2	46.3
HUDSON BAY					
St. Mary's	Lake Sherburne	66.2	48.7	23.2	29.7
YELLOWSTONE					
Stillwater	Mystic Lake	21.0	5.6	0.0	6.0
Clark's Fork	Cooney	27.4	-	20.2	17.3
Tongue	Tongue River	68.0	66.7	57.0	40.8
Big Horn	Big Horn Lake	1,356.0	1,098.0	888.4	810.3

Average based on 1958-72 period.



Many reservoirs in Montana are full or nearly full. In contrast to last year when streamflows were quite low, the runoff is adequate for filling all storage projects this year.

SOIL MOISTURE READINGS DISCONTINUED

The Soil Conservation Service has discontinued readings at soil moisture stations in Montana.

With present restrictions on staff and funding and the move toward more automation, we cannot continue with this program.

All data gathered on soil moisture and temperature will be published in the near future.

Soil moisture readings were initiated in 1956. These stations were located primarily in the foothills and mid-elevations of mountain drainages. Most sites had five moisture and temperature units buried at depths of 3, 10, 19, 30, and 42 inches,

to represent a four foot profile.

Since upper layer conditions change more rapidly, the units were spaced closer together in the upper reaches. There were 24 active soil moisture stations at the time they were discontinued.

The stations were installed primarily to improve the accuracy of water supply forecasts. However, the trend toward near-real-time data, the use of other variables to represent watershed soil moisture, and the availability of staff and funds for only high priority programs has made it impractical for the Snow Survey Unit to continue these soil moisture readings.



A watershed soil moisture station.

SOIL MOISTURE as of May 15, 1978

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average †

COLUMBIA RIVER DRAINAGE

<u>Clark Fork</u>							
Black Pine	7100	48	10.0	5/15	8.4	8.8	*
Skalkaho Summit	7260	48	10.8	4/29	10.2	9.3	9.9

MISSOURI RIVER DRAINAGE

<u>Gallatin</u>							
Bridger Bowl	7250	48	17.0	4/26	14.8	16.1	16.0
College Site No. 2	4856	54	17.7	5/12	16.0	13.5	*
Lick Creek	6860	48	18.8	5/15	14.0	14.6	*

<u>Missouri Main Stem</u>							
Kings Hill	7420	48	11.8	5/12	10.6	10.7	*
Stemple Pass	6350	48	5.9	5/5	5.3	5.4	5.0

YELLOWSTONE RIVER DRAINAGE

<u>Shields</u>							
Battle Ridge	6020	48	17.6	5/15	14.6	13.0	*
<u>Upper Yellowstone</u>							
Northeast Entrance	7360	48	9.4	5/11	11.0	-	-
<u>Clarks Fork</u>							
PMC Dryland	3700	48	20.7	5/2	7.5	5.4	9.4

† Average for period of record.

SOIL MOISTURE as of June 1, 1978

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average †

COLUMBIA RIVER DRAINAGE

<u>Kootenai</u>							
Baree Trail	3800	48	7.5	-	-	6.4	6.2
Murphy Lake R. S.	3000	48	22.6	6/1	22.5	19.4	20.5
Raven	3050	48	23.0	-	-	14.1	16.4

<u>Flathead</u>							
Desert Mountain	5600	54	8.4	6/5	8.6	7.8	8.8
Marias Pass	5250	54	6.5	5/27	8.6	7.4	6.3

<u>Clark Fork</u>							
Black Pine	7100	48	10.0	5/30	8.4	8.8	8.7
Lubrecht Forest	4100	48	26.8	-	-	15.5	21.9
Seeley Lake R. S.	4030	48	11.9	-	-	8.8	10.7
Skalkaho Summit	7260	48	10.8	5/26	9.9	10.4	10.0

<u>Bitterroot</u>							
Gibbons Pass	7100	48	7.1	5/31	6.6	6.1	6.9
Lolo Pass	5250	48	10.6	6/2	10.2	10.0	9.9

MISSOURI RIVER DRAINAGE

<u>Beaverhead</u>							
Lakeview	6700	48	15.3	5/31	16.1	17.6	15.2

<u>Madison</u>							
West Yellowstone	6700	48	6.5	6/1	2.8	2.8	3.0

<u>Gallatin</u>							
Bridger Bowl	7250	48	17.0	5/31	14.7	15.8	16.0
College Site No. 2	4856	54	17.7	5/26	15.8	16.2	14.4
Lick Creek	6860	48	18.8	5/31	13.9	15.0	17.2
Twenty-One Mile	7150	48	10.0	6/1	9.7	8.6	9.8

<u>Missouri Main Stem</u>							
Kings Hill	7420	48	11.8	5/31	10.8	9.9	10.6
Stemple Pass	6350	48	5.9	5/31	5.3	-	5.2

<u>Milk</u>							
Beaver Creek	3950	48	20.9	5/27	16.9	17.9	15.0
Rocky Boy	4700	36	10.1	5/27	9.6	9.1	9.6

YELLOWSTONE RIVER DRAINAGE

<u>Shields</u>							
Battle Ridge	6020	48	17.6	5/31	16.4	13.1	14.6

<u>Upper Yellowstone</u>							
Northeast Entrance	7360	48	9.4	5/30	9.3	-	9.3

<u>Clarks Fork</u>							
PMC Dryland	3700	48	20.7	5/31	10.8	5.0	8.9

† Average for period of record.



Water, much of which originates from melting snow, is used for many things including irrigation of agricultural crops. The water supply outlook for this irrigation season looks good for most areas in Montana.

NOTE!!! Dedication of Snow Surveyors

We received a telephone call soon after our copy was submitted for press that snow surveyors had walked 8 miles through mud and snow and developed significant blisters to obtain the snow readings. We felt obligated to stop the presses long enough to include these snow readings in the report.

The Stryker Basin snow course, northwest of Kalispell, showed 46 inches of snow depth with 27.4 inches of water content. Last year there was 8.0 inches of water content. Herrig Junction and Chicken Creek both had no snow. These snow courses are measured by the State Forester's Office on the Stillwater State Forest.

